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A STUDY IN CIVIC TRAINING

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I

School education tends to overestimate the importance of instruction and to underestimate the value of training. William James, some years ago, said, in a public address:

> "There is not a public abuse on the whole eastern coast which does not receive the enthusiastic approval of some Harvard graduate. Fifty years ago the schools were supposed to free us from crimes and unhappiness, but we do not indulge in such sanguine hopes to any extent today. Though education frees us from the more brutal forms of crime, it is true that education itself has put even meaner forms of crime in our way. The intellect is the servant of our passions, and sometimes education only makes the person more adroit in carrying out these impulses." (Quoted by C. A. Ellwood, *School Review*, 15:544.)

Instruction may or may not establish a proper attitude toward a matter under consideration, but the essential thing after all is just this establishment of attitude—of truth seeking, of aggressive activity, etc.—rather than only mastery of subject matter.

We cannot tell just how far knowledge affects attitude. A group association test of forty stimulus words taken from civics was given for this purpose to 347 pupils in the schools of Grafton, Gloucester and Pittsfield, Mass., ranging in age from ten to eighteen years. This test we shall call Group Association Test Alpha. The words were so chosen as to not only reveal knowledge of civics but also to show either an attitude of public spiritedness on the one hand or relative indifference on the other. The methods of handling this test and of interpretation of results were like those used in connection with Group Association Test Beta and will be fully described later in connection with the latter. A fair degree of

GROUP ASSOCIATION TEST ALPHA

Your first and last name .....

Your age on your LAST birthday..... Boy or girl .....

Your grade in School .....

Below you will see a list of words. They all have to do with civics or public affairs. Most of them you understand. After reading each word please place in the next column, directly opposite it, some other word which it suggests to you. If you do not understand any word just put an X opposite it and pass on to the next word.

So as to make the matter clear to you I have already done the first three. WATER made me think of how clear the water is that I drink, so I wrote CLEAR in the next column, directly opposite water. ELECTION made me think of the place where I vote, a POLLING-BOOTH, so I wrote in the next column, directly opposite ELECTION, the word POLLING-BOOTH. LOYALTY made me think of a very loyal friend, so I wrote the word FRIEND. You do the remaining seven words.

WATER.....clear.....

ELECTION.....polling-booth .....

LOYALTY.....friend.....

GRAFT.....

FLAG.....

GOVERNOR.....

NAVY.....

APPROPRIATION.....

VETERAN.....

JUDGE.....

When you have finished these hold your pencil up and await the word to turn the page. On the following page there will be other words of the same kind and you are to do the same with them.

Do the same with these words as you did with those on the preceding page.

ARMY
VOTE
EDUCATION
TAX

LAW
MONEY
HEALTH
MONOPOLY

SOCIAL
RECREATION
COUNTRY
WAR

FORESTS
CONTAGION
IMMIGRANT
WAGES

WELFARE
LIBERTY
SERVICE
DEMOCRACY

COMMUNITY
CITIZEN
SAVINGS
PRIVILEGE

COMMERCE
SELECTMEN
PRESIDENT
BONDS

TREATY
LOAN
POSTMASTER
IMPROVEMENT

STRIKE
PENSION
TREASURY
TRUST

COURT
HIGHWAY
WARRANT
CABINET

When you have finished put your pencil down and await further directions.

correlation was noticeable between the civic intelligence evidenced by intelligible reactions and social or public-spirited responses (r = .39, p.e. .031), but the increase in the number of public-spirited or social responses did not compare favorably from age to age with the rate of increase in civic intelligence; nor was there an appreciable increase of public spiritedness or sociality with age.

Figs. 1 and 2 and Table 4 show the results in detail.

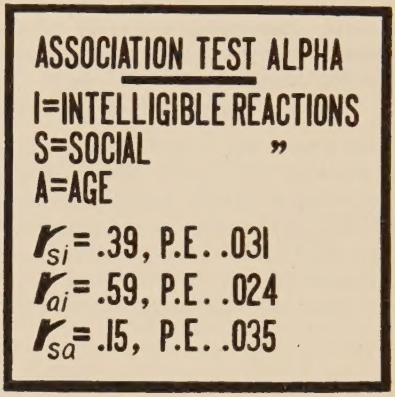

FIG. 1

Progressive schools have afforded us, recently, a better foundation upon which to build. The boys of the McDonough School (23, 250) demonstrated the capacity of pupils to work out complicated problems of government. This kind of practice, coming at a period in the child's development when he is highly receptive, may be the source of much wisdom and social balance in later years. Our most dangerous radicals as well as our worst ultra conservatives are not infrequently excellent students of civics, but they are often lacking in the discipline of experience such as the McDonough School afforded.

In contrast with the McDonough School, where the boys were actually making their own laws, is the school at Abbotsholme, under Dr. Reddie, where the boys were not allowed to govern themselves to the same degree but were trusted to control themselves in accordance with the rules of the school. Even in such a case there is opportunity for experience to operate as a disciplinary factor. The essential thing is that whatever responsibility is placed upon the pupil should be

genuine. Whether it be considerable or not is relatively secondary.

Better known to us is the Moraine Park School, at Dayton, Ohio. This school constitutes in the words of Stanwood Cobb (9) "A wonderful demonstration of freedom, backed up by efficient work as proved in standard tests." The aim here is to develop attitudes. Student self-government prevails and citizenship is learned by practising citizenship. The pupil is self-supervised, and learns to govern his own comings and goings. The governmental machinery consists of a community meeting and a commission form of government with a community manager, under whom there are departmental directors. Project work and measurement of pupils according to degree of mastery of the "arts of life" instead of by subjects is a further aid in establishing attitudes of social value.

Still different is the Francis W. Parker School of Chicago, which provides a rich community life, where education is regarded as a preparation for citizenship and social co-operation. Here, too, we find student government, but, more important, social production as well. This latter is secured by group project work. Each child's work is regarded as a contribution to the group. No marks are given. Attention centers on results rather than on rewards.

These schools are typical of others which are not so well known. They are far ahead of most experiments with school cities, republics and the like, which, as ordinarily organized and conducted, have little other than dramatic value. For citizenship training it is not essential that activities in which the pupils participate be of a political or civic nature. It is rather desirable that the school work be so organized and the program so arranged as to allow a large amount of latitude and freedom and ample opportunity for essentially the same kind of relationship that exists between most adults. We are not attempting to train policemen, mayors, congressmen and the like, but citizens. Citizens must know how to live together and work together in homely fashion, meeting on all levels and in every kind of activity. No one activity has much greater civic training significance than another *per se*. It is rather the degree of co-operation and mutual interest in all activities which is significant. Colin A. Scott has, therefore, been advocating for years the formation of groups, which groups would be analogous to the new relationships in which one finds oneself involved in ordinary society.

"We do not find people in offices and parlors getting up and asking questions to which everyone knows the answer, or is expected to feel

disgraced if he does not. The individual who should become seriously enamored of the ordinary school practice would find little room for himself in the world of real life. The particular things that are done in school do not cultivate even a working majority of the habits of action which are used in the world at large. This is not because the habits of action of the school are superior to those of the world, but simply because they are narrower, and better suited as a preparation to the life of a primitive clan than to that of a highly differentiated society. They are the result of the pressure of the causal forces of society, passed on by the teacher without consideration of the actual effects which are being created in the social organism of the school itself.

"In real life, on the contrary, society at its best organizes in groups in which each individual in the various groups to which he may belong, finds himself in contact with others whose weaknesses he supplements or whose greater powers he depends upon. The idea of such a group as a whole is not necessarily contained in the brain of any single member, and as the idea developes by social interpenetration it becomes, in all its many-sidedness, too large for any member to contain. The function that each plays is a different one, and the thought of each concerning the group is likewise different. And yet such groups tend to stick together. They exercise some form of moral restraint or attraction upon their constituents, who yield them an obedience sufficient to maintain their cohesion for years, and sometimes for generations. If the school is to prepare for society as it is, it would be natural to expect that some such form of social activity, however embryonic, should be found as a necessary feature of its life.

"This, however, is a feature of organization that cannot come from the direct impact of outside pressure. Neither society as a whole nor its personification in the teacher, can say: Go to; let there be groups. Let us put so many in one group and so many in another. Let us select individuals according to their capacities and give them work that will be suited to their needs. No, a real social group cannot be reduced to a mere instrument of the teacher, a means or a method for accomplishing certain preconceived purposes. It is necessarily too manysided for that. Nor can the constraint required and the obedience developed originate from the outside of the group. It must be a part of its own specific constitution and necessary to its maintenance. The group must be capable of going to pieces, a thing it cannot do if it is to depend on the authoritative backing or the constraint of the teacher. Indeed it is only when it can go to pieces that there is any reality in the effort to hold it together. It is only then that there is any true loyalty developed. It is only then that its members feel the characteristic group restraint, and submit their private wills for the good of the whole. True responsibility, and even obedience of the highest type, is felt only when the group as a whole is free." (31, 15.)

Group work, but not as free as that proposed by Scott, has been utilized by Kerschensteiner, in Munich. Kerschensteiner, in his industrial school, has aimed at the creation of an *Arbeitsgemeinschaft* or community of workers. His idea is to apportion all the work of the school out to groups of say four, six or eight pupils, holding the group rather than the individual responsible for the results obtained. He believes that the group will exercise a sufficiently strong pressure upon the individual so that he will be forced, in a natural and usual way, to discharge his responsibilities. To quote:

"Another moral quality, especially in regard to the best pupils, is put to the test in a way that is impossible in our present school system. I mean the consciousness of responsibility. Not only the leaders of the separate groups but each member of them is daily made aware of the fact that the work done is of importance for him as an individual, but also goes to make or mar the quality of the work of the whole group. Our present day schools are hardly able to awaken the pupil to the idea of responsibility; far less are they able to produce in him a real, live feeling of responsibility." (21, 43.)

Kerschensteiner admits that we should not form such communities or groups before the pupils reach a sufficient degree of maturity. He also plans to guard against binding together in groupings community elements which are too widely different in capacity. In order to take care of those who possess unusual abilities he would place them in groups by themselves so that more might be required of them.

Kerschensteiner's experience has led to the conclusion that this group work has a desirable civic result and he regards such education as specific training for citizenship. His work, however, differs from Scott's plan in that Scott feels that the work should be self-organized. Scott reports the self-organized group work of pupils in an interesting instance. (31, 106.) Parallel to this I am able to report from my own observations a mixed first and second grade class which enjoyed, several times daily, a "free period" during which they were allowed to do anything they wished. They broke up, most of them into groups, though a few remained by themselves, and engaged in multiform activity, such as games, drawing upon the blackboard and construction work of various kinds, but invariably doing something of value and as invariably carrying on their activities in such a way as to not disturb each other. The room could not be quiet under these conditions, but it was orderly. The general atmosphere of consideration for each other was better than I have seen prevail at some teas. Scott also shows (31, 110) at some length, how homogeneous groups can and do exert sufficient pressure of a social nature upon their members to serve as a positive disciplinary force. This is in reinforcement of Kerschensteiner's observations.

II

A number of experiments have been made which indicate clearly the stimulating effects of the group upon the individual. The first of these appears to be that the group constitutes a stimulus to greater productivity. (3.) Mayer (26) in dictation, mental and written arithmetic, memory tests and combination tests, found that twenty-eight schoolboys averaging

twelve years of age were able to work more quickly and do better work in groups than alone. Triplett (34), working with forty children, found that they turned a reel more rapidly, though in some cases not as economically of effort, when they worked in the presence of another child than when they worked alone. Moede (28) more recently, experimenting with rate of tapping and with the ergograph, secured better results in group work than with the individual. In experiments with arithmetic he obtained no better average from the group work but the average deviation from the central tendency was reduced. Moede also found in repeated tests, that while grouping of any kind appeared to secure greater production than individual work, small groups were superior to large in this respect, and subgroupings within the group were, as might have been expected, still more effective.

During the spring of 1919 an experiment was conducted by the writer in the public schools of Grafton, Mass., the object of which was to determine the civic and other effects of group work. Two seventh and eighth grade rooms and one sixth grade room were chosen for the field of operations. One of the seventh and eighth grade rooms (26 pupils) was placed on a co-operative basis. The pupils were allowed to freely assist each other and to work together. Their work was done in groups of from two members to the class as a whole, but averaging about six members. The groups were spontaneous both in formation and operation. Neither the individual pupil nor the individual group received any credit for work done. Report cards and individual grades were abandoned. Instead a class score was kept which the pupils strove to raise. This put a premium upon grouping being such as to include and improve the work of poor members of the class, for otherwise they would adversely affect the score. Class records for each subject were kept in the form of graphs showing median and quartile tendencies from day to day and from week to week. The pupils were encouraged by a rising line in any record and concerned over any drop. A general rising tendency of the three lines with an additional tendency to convergence of the three became a source of elation. This class was under the guidance of a teacher of years of experience and a reputation for knowing children and doing good work with them.

The other room of this grade (28 pupils) worked under the traditional form of government and discipline. Individual reward in the form of high marks and punishment in the form of low ones afforded the stimulus. The teacher of this room was also very capable but of a different type. The first

room is referred to in the following tables as the co-operative or "C" group, while the second is referred to as the non-co-operative or "N."

The sixth grade room (38 pupils) was divided into two groups of roughly equal ability. This gave opportunity to check up such differences as might be due to teacher personality or other local influences, and also provided the experimenter with greater range so far as pupil age was concerned.

Between the two seventh and eighth grade rooms there was no possibility of rivalry entering into the work for they were unaware that they were being in any way compared. The "C" room simply realized that they were working under a new plan. An element of rivalry may have entered into the work of the sixth grade room as the two groups were aware of the difference in treatment, but it is improbable that it would be very keenly felt. All the rooms knew that they were likely to be tested frequently and the class scores determined. They were aware that they were expected to maintain the departmental standards of both quality and quantity, but they were unaware of any experimental study being made.

At the outset all three rooms were measured by the Monroe Arithmetical Reasoning and Silent Reading Tests. The seventh and eighth grades were also measured in English composition by the Hillegas Scale. The English composition was measured again every three weeks until the end of the ninth week. The reading and arithmetic were tested again at the end of fourteen weeks. Tables 1, 2 and 3 show the results.

TABLE 1. ARITHMETICAL REASONING. MONROE TESTS

		GRADE VI		GRADE VIII	
		C group	*N group*	*C group*	*N group*
Test 1	Upper quartile	21	29	23	24
	Median	18	21	17	19
	Lower quartile	11	11	9	14
Test 2	Upper quartile	24	32	30	32
	Median	21	25	25	25
	Lower quartile	12	13	12	15
Amounts gained	Upper quartile	3	3	7	8
	Median	3	4	8	6
	Lower quartile	1	2	3	1
Percents gained	Upper quartile	14	10	30	33
	Median	17	19	47	32
	Lower quartile	9	18	33	8

TABLE 2. SILENT READING. MONROE TESTS

			GRADE VI		GRADE VII		GRADE VIII	
Rate (speed)			*C*	*N*	*C*	*N*	*C*	*N*
	Test 1	Upper quar.	81	81	109	108	153	152
		Median	70	69	102	99	134	139
		Lower quar.	63	60	92	84	121	129
	Test 2	Upper quar.	127	121	119	114	160	161
		Median	116	102	105	101	149	149
		Lower quar.	102	91	93	85	136	133
	Am'ts gained	Upper quar.	46	40	10	6	7	9
		Median	46	33	3	2	15	10
		Lower quar.	39	31	1	1	15	4
	% gained	Upper quar.	57	49	9	6	5	6
		Median	66	48	3	2	11	7
		Lower quar.	62	52	1	1	12	3
Comprehension	Test 1	Upper quar.	14	20	22	22	28	31
		Median	10	16	18	18	24	27
		Lower quar.	6	12	13	11	19	21
	Test 2	Upper quar.	26	22	27	27	35	38
		Median	22	17	21	21	30	32
		Lower quar.	17	14	18	16	25	29
	Am'ts gained	Upper quar.	12	2	5	5	7	7
		Median	12	1	3	3	6	5
		Lower quar.	11	2	5	5	6	8
	% gained	Upper quar.	86	10	23	23	25	23
		Median	120	6	17	17	25	19
		Lower quar.	183	17	38	45	32	38

(In these reading tests the returns from grade six appear to be abnormally affected. They have therefore not been taken into account in the conclusions reached. All decimals in the foregoing have been figured to the nearest whole number.)

TABLE 3. ENGLISH COMPOSITION. HILLEGAS SCALE

GRADES VII-VIII	CO-OPERATIVE GROUP				NON-CO-OPERATIVE GROUP			
Test No.	1	2	3	4	1	2	3	4
Upper quartile	59	67	66	64	63	68	68	60
Median	53	53	52	56	51	52	56	54
Lower quartile	43	49	48	48	43	50	40	44
Loss or gain, Upper quar.				5				−3
Median				3				3
Lower quar.				5				1

It is at once apparent that there was no marked advantage, so far as subject achievement was concerned, for either group or method tested. On the whole the co-operative classes

showed a slight advantage, although from test to test and from room to room it varies. There was a tendency in both types of work for the "fringes" of the classes to make greater gains than the middle range, with the tendency somewhat more marked in the case of the co-operative classes than in the case of the non-co-operative. That is, the distribution of test scores tended to become more discrete in the upper half of the class (or at least more extended) and to bunch upward in the lower half. This might bear the interpretation that group work is a stimulus to the leaders as well as to better work on the part of the relatively inferior.

Standards being as well maintained under the co-operative plan as under the usual one it was then given a certain amount of publicity and other teachers who desired to try it were allowed to do so. After three months of further continuation of the work in rooms where the measurements were made and of varying degrees of casual experimentation on the part of fourteen other teachers the teachers and pupils affected were asked for their candid opinion in regard to the co-operative organization of classes. Their replies, treated fully in the 1919 Annual Report of the Superintendent of Schools, Grafton, Mass., brought out as evident results: a readiness to bear responsibility, increased courtesy and consideration, encouragement of the timid and bashful, co-operative effort, more interest, and, in some cases, scholastic improvement.

The group work of the Grafton pupils was integrated by three factors. In the first place the work of any given group or constellation of groups constituted a common task. In the second place every member of every group felt his own personal responsibility for the result secured and any failure meant a perfectly apparent loss to the community. Third, the groups were spontaneously formed around momentary leaders. Integration depends upon leaders. Leaders may mean domination. But domination is less likely and a higher quality of leadership more probable where groups are small and frequently changed, or where they are spontaneous in their formation and capable of just as spontaneous dissolution when the task is completed.

One hundred twenty-nine of those to whom the Alpha Test was given were pupils who had had the advantage of from six months to a year or more of this co-operative work in Grafton. These pupils scored slightly lower in the number of intelligible reactions, but they scored both relatively and actually a little higher in the number of civic-social reactions. The accompanying table (4) and Fig. 2 show this quite clearly.

TABLE 4. GROUP ASSOCIATION TEST ALPHA

Ages	Non-Group-Trained					Grafton Group-Trained				
	No. of cases	Average No. intelligible reactions	Standard deviation	Average No. social reactions	Standard deviation	No. of cases	Average No. intelligible reactions	Standard deviation	Average No. social reactions	Standard deviation
10	7	21.1	2.5	0.7	0.2	6	19.6	2.2	2.0	0.9
11	19	22.3	4.0	1.9	1.4	17	24.2	4.0	2.4	1.5
12	7	25.6	5.4	2.2	1.0	14	24.2	4.9	2.5	0.9
13	19	30.0	6.7	2.7	1.6	21	28.5	4.8	2.3	1.4
14	32	32.7	6.1	3.8	1.9	24	32.1	5.1	4.2	1.9
15	32	36.0	3.2	3.5	2.2	17	35.2	4.1	4.0	2.0
16	38	36.3	3.0	4.2	2.4	9	35.7	3.1	4.0	1.9
17	28	38.4	1.9	3.3	2.2	11	37.3	3.5	5.3	1.9
18	36	36.8	4.2	2.6	2.1	10	37.3	2.8	5.4	1.0

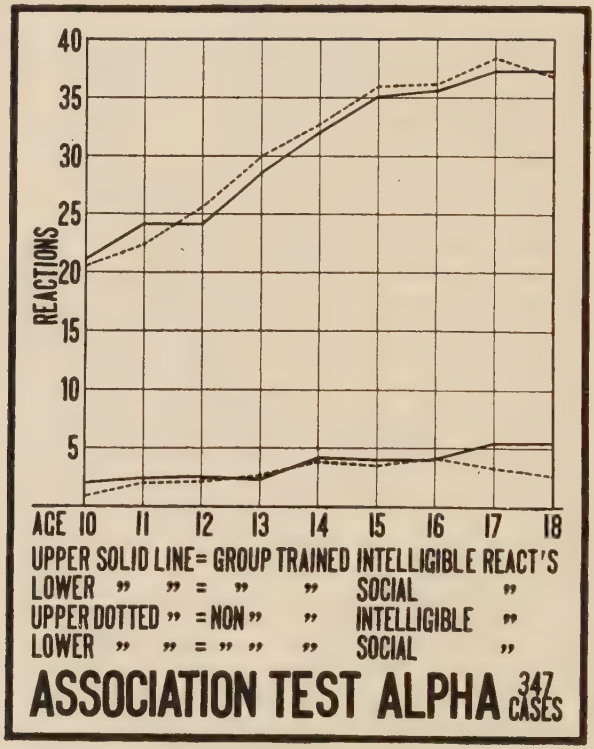

FIG. 2

To test more thoroughly the relationship between what we may call sociality and participation in group activity generally another group association test was constructed. This test, which we shall call Group Association Test Beta, consists of a list of twenty-one stimulus words and an opportunity to indicate the number and kinds of organizations to which the subjects tested belong or ever have belonged. The first eight words, which shall hereafter be designated as Series A, were taken from Test Alpha because they received the largest number and variety of reactions of the stimulus words in that test. These words, with characteristic social and non-social reactions follow:

Stimulus word	*Social reaction*	*Non-social reaction*
flag	defend it; my country; our country; loyalty; justice	the thrill it gives me; the first flag; the flag over our schoolhouse; a banner; Stars and Stripes; flagpole; American flag
law	obey; justice; duty	U. S. Constitution; no law, no government; rule; behavior; lawyers; courts; policemen
citizen	obedient to law; one who pledges loyalty to his country; people who work for others; faithful; loyal; one who looks out for the welfare of a town or city	American; citizen of the U. S.; rights; voting; naturalization
welfare	for the good of the town; taking interest in the country; welfare of the public	benefit; good; dental clinic; good luck; society that does good; for your own good
service	soldiers that went to France; O'Connor (local hero); every citizen should give his service to his country; Red Cross	don't be late delivering papers; church; servants; street cars; a favor; forest service
social	to be always pleasant; amiable; friendly; helping each other	a party; club; church; gathering; society
graft	disloyal profiteers; profiteers are traitors	member of political party; get away with money; prohibition laws being enforced; stealing; rich; getting something that isn't yours
community	collection of people helping each other; be a good member	locality; vicinity; lot of houses and stores; community house; group; school; people get together and sing

The provision was made in Test Alpha for space for explanation of reactions. A study of the explanations given, together with questioning where it seemed desirable, gave a

number of valuable suggestions upon which to establish an interpretative viewpoint in both tests. A number of the reactions might at first appear social which were interpreted as non-social. Rigid exclusion was practised wherever there appeared to be the slightest occasion for doubt. A different policy might have been adopted and justified, but this one was chosen because of its relative simplicity and its greater definiteness. Only those reactions were taken as social which could be so interpreted from the probable viewpoint of a subject of the age of one reacting to a given paper. Criteria for judgment on this point were developed from general experience with children on the part of the examiner and on the basis of the explanations and interviews in connection with Test Alpha. By this means earnest attempts were made to avoid misreading adult interpretations into child reactions. Language is a social tool, and from the adult standpoint anything may be social.

Another difficulty arose out of the possibility that some of the acceptedly social reactions might be mere phrases that please, but this is probably offset by the numerous cases that were social, but, because of doubt in interpreting, were discarded as non-social.

The next thirteen words, intended to test the degree of group participation, with characteristic responses, follow:

Stimulus word	*Group-participation reactions*	*Non-Group-participation reactions*
rule	school regulation; a law to keep us out of trouble; baseball player put out of game; for everybody to obey	slide rule; make a straight line; keep to the right; military life
school order	obedience; silence; don't smoke	teacher; tells your character
score	playing baseball; we trimmed the Boys' Club five	2 to 1; 11 to 2; keeping score at games; basketball; a number
double play	two out at once; when I was put out in one	baseball; double score; when I saw the Braves play
sacrifice	sacrificing myself for team work; when we let ourselves be out to advance another	worship; to give up something you want; soldiers; to die for someone else; for welfare of others
run	going on an errand for my mother	to move fastly with the legs; chasing a street car; a score of one in baseball; exercise
gang; crowd; "the bunch"	the gang; the B R crowd I go with; our five	lot of boys; a bunch of fellows; the Greendale boys
initiate	ducked, ran gantlet, branded with ice; when Owen joined our club	joining a club; make fun

errand	for mother; hurry to the grocery before it closes; when I lost some money	running; go after; service
chums	Evelyn and I; my chums	particular friends; boys or girls who go together
member	our bunch	to belong; Sunday school class

In order that our measurement of group participation be more accurate each individual's returns from this list of thirteen were first interpreted in the light of his report as to the number and kinds of groups to which he belonged or ever had belonged. Membership in a family of brothers or sisters was interpreted as another group membership. This was a marked correlation ($r = .56$, p.e. .0204) between group membership as revealed by this report and group participation as indicated by the reactions. But neither group membership as indicated by the check list nor group participation as indicated by the returns to the stimulus words appeared to give a sufficiently accurate measurement of the thing we were trying to measure in relation to sociality. In the first place "membership" is such a loose and indefinite term with children and adolescents that it could not be accepted as an accurate indication of serious participation. In the second place the difficulty of interpreting returns was, even with the help of the check list of membership, therefore, as great if not greater than in the case of the social versus individualistic responses to the eight words of Series A. The final plan adopted was to accept those reactions only which were unmistakably such and average the returns thus secured with the number of groups to which the individual belonged. The returns finally secured by this process we have designated as Series B.

Regarding the whole test we should note that inaccuracies are inevitable, but by a constant exclusion of doubtful cases in our interpretation of each series we are reasonably certain of the reliability of our returns from a sufficiently large group, and we are reasonably clear as to what in each series is being compared. A non-social reaction to any word or list is not to be interpreted as indicating that any one reacting subject is non-social. An association test of this sort depends entirely upon chance verbal reactions and they cannot be a very accurate measure in themselves of any one individual's tendencies other than for the given moment. The absence, in a group test, of reaction time information, is a serious defect from this standpoint. On the other hand, it seems reasonable to accept such returns from a sufficiently large number of cases as an indication of tendency. The number of

GROUP ASSOCIATION TEST BETA

(Use pen and ink)

Full name.....Age last birthday .....

Your grade in school.....How many brothers and sisters have you?....

Write opposite each word or phrase in the following list whatever it calls to your mind.

flag.....
law.....
citizen.....
welfare.....

service.....
social.....
graft.....
community.....

rule.....
school order.....
score.....
double play.....

sacrifice.....
run.....
gang.....
crowd.....

initiate.....
errand.....
chums.....
member.....
"the bunch".....

Put an X after each kind of organization in the list below, of which you have ever been a member.

baseball team.....charitable society.....musical club.....
basketball team.....church club or society....canning club.....
football team.....military company.....sewing club.....
track team.....sporting club.....social club.....
hockey team.....secret society.....committee.....
any other team.....camping party.....class.....
scout troop.....gang.....“circle”.....
any other club or society....

cases necessary to demonstrate this would depend, of course, upon the nature of the distribution of the returns, the degree of correlation indicated and the probability of error.

Test Beta was given to 517 pupils in the public schools of Grafton, Hopedale and Worcester, Mass., and Thompson, Conn. These pupils ranged in age from twelve to eighteen and over. The Pearson coefficient of correlation of sociality as determined by the reactions to Series A and age is barely significant but low, though somewhat higher than it appeared in Test Alpha. That between group participation (Series B) and age is higher. But the correlation between sociality and group participation is marked. These correlations are all shown in Fig. 3, as well as the correlation between sociality and group participation with the age factor eliminated by the

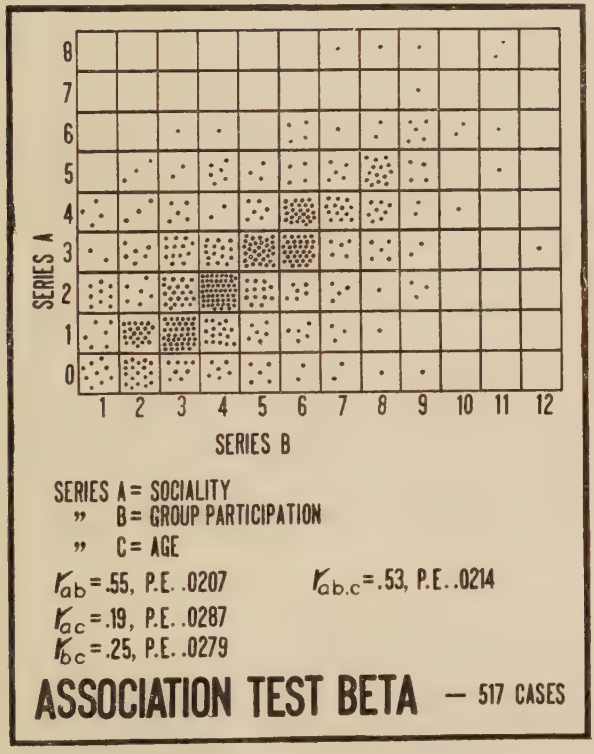

FIG. 3

method of partial correlation, and are offered as a part of the specific contribution resulting from the application and treatment of our tests.

The coefficient of correlation, however high, does not indicate which of the two factors is the controlling one. Sociality may be the result of group activity, but as most of this group activity was purely voluntary it might easily be asserted that it may be the result of the sociality of the pupils. However, in view of the observations and experience of men like Kerschensteiner and Scott and of the even slight degree of evidence resulting from the class group training in Grafton as shown in Fig. 2 and Table 4, it does not appear unreasonable to accept the group activites as causal, and to conclude that the group constitutes a stimulus, not only to greater productivity, but also to sociality.

III

Heretofore consideration of the social effects of group activity has been based upon purely empirical observations. These observations have been made in some detail by persons whose reliability and competence are beyond question, but like empirical data commonly they need to be reinforced by some kind of objective evidence. The group association tests Alpha and Beta have afforded us such reinforcement, but they themselves, in turn, have been demonstrated to have value as a means of measurement in matters of this kind. The tests as given and rigidly interpreted have revealed the existence of marked correlations. These correlations are not produced by the tests, but, rather, are uncovered or demonstrated by the tests and statistical treatment. If the tests reveal such correlations then it is evident that they have value. We may, therefore, state that we have found in the group association test, properly administered and carefully interpreted as described in the previous section, a reasonable means of measurement of the bearings of an educational factor.

As a test within a test, to measure the accuracy of our returns, a comparison was made of the age-sociality correlation coefficients for the two tests. Series A of Test Beta was taken from the list of stimulus words of Test Alpha. Therefore, if the tests have measuring value the correlation of sociality with age should not be radically different, though not necessarily exactly the same, for each test, even though they be given, as they were, to a different personnel. (Only

31 of the 347 Alpha subjects are included in the 517 Beta subjects.) The results were:

Alpha sociality-age (SA), r = .15, p.e. .035
Beta sociality-age (AC), r = .19, p.e. .029

As the other matters correlated were not identical in the two tests we could not demonstrate them in the same way, but taking into account the nature of correlation itself and the notable and definite coefficients we have secured we are prepared to propose that the application of the group association test and biometric methods to the measurement of the civic effects of group work and the consequent demonstration, not only of these effects but also of the value of the tests themselves, constitutes the specific contribution of this study.

Such tests might be applied to such problems as the relative social effects of groups of varying sizes and kinds, or the civic effects of different types of community life, or the comparative social effects of the group upon its superior and inferior members. Especially by the use of the method of partial correlation it would be possible to determine the degree of group influence in comparison with a larger number of factors than we have taken into account. This type of test may also be applied to the measurement of the influence of subject matter, teachers or administrative factors as affecting pupils in different ways, and may have value as part of a psychological examination and analysis of pupils. The chief advantages of association tests are the infinite variety of form they may assume to meet various conditions, the ease and quickness with which they can be made up for any material, and the readiness with which they may be given to young pupils. On the other hand their chief difficulties will always be (1) that of proper interpretation and hence of scoring, and (2) their inapplicability as group tests to any but very large groups. The problem of proper interpretation also creates an administrative difficulty, for one person must ordinarily be relied upon to do all the scoring unless some adequate control can be established.

IV

We have every reason to believe that normally one who is a member of a sufficient number of groups—who is a conscious participant in their activities—will develop a gradually increasing larger social consciousness, and the best there is in patriotism is to be found in just this type of social response. Dr. W. H. Burnham believes the training secured in the

smaller groups to be the best sort of preparation for social functioning.

"Whenever in the team sports the individual player sacrifices his own desires and his own interest for the success of the team, that is patriotism, and whenever the pupil in the school sacrifices his own interest for the sake of the school as a social group that is patriotism. The significant thing is that sacrifice of personal interest in the smaller groups, that is, training in patriotism in the smaller groups, is the best sort of preparation for the virtue of patriotism in the larger groups, the community and the state." (7.)

Dr. G. Stanley Hall goes even further and proposes that any attempt to develop the larger social consciousness too early may be disastrous. He says:

"Group selfishness is the first step in overcoming individual isolation. . . . For most, humanity is too large a sphere of altruism to have more than a sentimental development, and today, when so many interests are taking on cosmic dimensions, may be liable to weaken demotic or yet narrower spheres now within the range of practical everyday duties." (14, II, 430.)

But we are compelled, at this point, to consider the danger of arrested development, not only because of a precocious enlargement of the individual's social field, but also because of lack of normal stimulation to enlargement and development into a socially adjusted individuality. Optimal stimulation will normally arise out of identification with a sufficiently large number of groups of different kinds. Dr. Hall further proposes that

"Every youth should connect himself with as many other associations of diverse kinds as is practicable, for at this age, while individuality may be lost in one group only, it is saved and developed by several." (14, II, 430.)

Groups are not bound by nature to enlarge themselves into society as a whole. Nor do we usually consider society as a whole by any sort of analogy with any of the groups of which we are members. On the other hand the individual normally should integrate his various group connections into what is eventually society as a whole for him. This integration is effected by a process whereby he is himself a field of group interpenetration for his several groups. While one group can only very partially represent society and can serve only to that degree as an educative force, an ultimate integration of groups such as we here suggest will not only bear a greater likeness to the larger social whole but will also afford an increasingly adequate educational stimulus. Further, the gradual disintegration of any group, as all groups do disintegrate

eventually, will not, under such a situation, deprive the individual of normal stimulation. His energy would be diverted into remaining social channels in response to remaining stimuli.

V

We have shown in the foregoing the importance of the factor of group training in civic education. Modern psychology affords a basis for such training in recent studies of conditioned reflex, mental tendency, *Einstellung* and the like, which, in turn, are very closely related. To the ordinary teacher, engaged in training citizens, the term conditioned reflex may convey little meaning. It is a product of the physiological laboratory of Pavlov, in Russia. Pavlov's experiments were performed upon dogs and the nature of their results may be, perhaps, best expressed in the following quotation from Burnham:

> "If I give a dog a piece of meat, immediately the salivary glands of the animal begin to function and to secrete saliva. This is an ordinary reflex act. Now, if every time I feed the dog meat I ring a bell, after a time I may ring the bell without giving the meat and yet the saliva reflex will occur and the saliva be secreted. In the latter case an association has been formed between the auditory stimulus of the ringing of the bell and the ordinary stimulus of the meat. Psychologically the difference between this reflex and the simple reflex is that, in the former, lower centers alone function; in the latter, the connection between the peripheral stimulation and the response of the gland is mediated by the brain cortex.
>
> "The ordinary reflex act Pavlov calls an unconditioned reflex. The odor or taste of meat is a biologically adequate, or, as Pavlov calls it, an unconditioned stimulus; the secretion of the saliva, the natural reaction. The salivary reflex on occasion of the ringing of the bell without meat he calls a conditioned reflex. This is due to the association of the indifferent stimulus of the bell with the biologically adequate stimulus of the food; and the ringing of the bell is called a conditioned stimulus." (5, 450.)

Since the experiments of Pavlov, Krasnagorski at Petrograd, Dr. Mateer at Clark (25), Watson at Johns Hopkins and others have made extensive experiments with children and have secured results similar to those of Pavlov. Many forms of response are possible and variations in procedure and in result of many kinds have been tried and secured. For instance, even with a dog, Pavlov found the stimulus can be made to produce a reaction at a certain time later, say two or three minutes or more, so that a memory element is involved.

The conditioned reflex is a factor in everyday life, ubiquitously and constantly observable. Some of these responses date from the very earliest years, during which Watson believes personality is formed. We are offered a very interesting

account by Harvey O'Higgins (29, 153) of a man who was morbidly critical of everything connected with his meals, and who was especially irritable towards his mother as a result of the unpleasant conditioning of his first taking of food. His mother had been unable to get him to nurse normally and had been compelled to feed him with a spoon. This was accompanied by fits of colic, screaming, etc., and his mother and feeding both became inseparably associated with discomfort. Similarly we have examples of children who have experienced excessive expressions of love from their parents, leading to a craving for indulgence and adulation, and perhaps to Narcissism. Such cases make the parents and, perhaps, even later marriage partners, slaves.

The school affords countless opportunities for the formation of both good and bad conditioned reflexes. Witness the twisted postures adopted in the course of premature first efforts to write in the lowest grades, or the lad who can only recite either with his hand on his desk or when he is on his feet, or the more facile use of good English within the restricted limits of the English class, or the aid of a bit of forbidden chewing gum to concentration of attention.

The conditioned reflex, however, is not always positive in its action. Its negative or inhibitory action is just as common, and not improbably more serious. Meumann reports a case where a hostile teacher tactlessly introduced a boy to his new teacher in such a way as to make his success in the new room impossible for him. Not until he changed his school was it possible for him to do his usual good work. (6, 484.)

The amazing success of some "new" methods may be partly due to the removal of inhibitions that have grown up around the old ones. New methods are notoriously more successful when first initiated. If this success is largely due to a removal of inhibitions it would compel us to give attention to the consideration of whether or not inhibitory conditioned reflexes have, because of a greater amount of emotional accompaniment, a greater influence upon the school life of the child than many of the positive ones.

Applying the conditioned reflex to our civic training the first thing that occurs to us is the necessity for making effective in school those associations which we wish to be effective outside of and after school. The school should establish situations as nearly those of normal society as possible and afford training and experience in reacting to those situations. They will then become the conditioned stimuli for the kind of civic response outside of school which has been given in school. The older members of large families, as a result of

training, are notoriously more ready, throughout their lives, to assume responsibilities. The leaders in our urban life, for years, have been not only frequently from large families but surprisingly often the products of rural communities where they had early training in assuming responsibilities on the farm. Less comforting is the reflection that so many of our younger politicians have had training as urban gangsters, and there received a training that has been denied the generality by the schools.

If the school fail to give such training and experience, and especially if it fail to give a normal opportunity for putting into effect normal social responses its very subject matter may well become a conditioned stimulus to a non-social reaction. Such a non-social reaction may shortly become inhibitory of ordinary social responses, and the individual may develop a degree of uncertainty in regard to the purposes, propriety or desirability of different kinds of reaction—an uncertainty that he may delude himself and others into believing due to rationalization, especially if he has had an excellent "book course" in civics and the like. But his real difficulty will be a lack of the proper conditioning stimuli because needed associations have not been established. (4.) The man in this situation would be described as hesitant. Hesitancy and uncertainty are closely allied to fear, and fear of the wisdom or propriety of a few social responses is all that is needed to provide an ample number of conditioned stimuli to maintain a more or less continuous response in the form of a socially unfortunate "set" which will interfere with the social efficiency or activity of the individual. We have illustrations of this in the following cases:

Case 1. Sickly boy; too weak to be subjected to school conditions. Tutored by his sister. Grew up into a timid, shrinking boy. Father finally alarmed and managed to get him to join a Boy Scout patrol. Group activity and actual accomplishment made him over until he became the patrol leader.

Case 2. Family of Scandinavians had just immigrated to America. Two boys were sent to school. Understood no English. Schoolmates teased them at recess till they took to hiding throughout each recess period. A boys' club leader managed to get them into a Scout patrol where a different spirit prevailed. They learned how to co-operate and took their places in camping parties, basketball teams, etc. Became socially efficient, and were later instrumental in getting their parents into night school and on the way toward naturalization.

Case 3. Young lady, member of socially meagre household and the product of an environment with insufficient social stimulus. Fortunate enough to make the winning design for the medal for a public exposition.

First elation turned to later fright at publicity and being thrown into sharp contact with the community as a whole.

Case 4. Young lady of about 20. Owing to her mother's aversion to social life she has been deprived of social experience. Home life refined. An invitation to dinner threw her into a state of pitiable fear. Circumstances rendered acceptance unavoidable. At dinner was so frightened and uncomfortable that she would not, for instance, take cream for her coffee for fear she might spill it. Same young lady would not enter famous metropolitan stores on the occasion of a recent trip for fear she might commit some *faux pas*. List of her imagined possibilities for embarrassment amazing in range as well as in improbability of content.

Case 5. Boy of 12. Restless. Could not restrain tendency to talk and move about in school. Teachers punished instead of studying him. Developed hatred for school. Frequent truant. Further punishment. Regarded by community as a bad case and "different." Ran away and hid in an unused cemetery vault. Lived for several days on results of nightly foraging trips. Discovered and brought back. Superintendent of schools transferred him to socialized schoolroom where group work prevailed. Almost immediately he showed ability, willingly assumed and discharged responsibility. One year later entered high school and had ambition to later go to engineering school.

Instances like these could be multiplied but these will suffice.

Baird (2) and others have shown that a mental set may be established by purely subjective factors. These factors are stimuli just as certainly as objective and external factors, and any stimulus may become a conditioned stimulus. Thus fear and uncertainty arising out of a lack of proper stimuli, such as we have just seen in these cases, may in turn, themselves become improper stimuli. School rules may inhibit impulses to social activity and thus create a whole series of conditioned responses such as the association of an unpleasant affective condition with school and a consequent lowering of school effectiveness, or the association of passivity rather than of activity with learning. These are antagonistic to sociality as well as deleterious influences upon the learning process. In one classroom we may have low productivity, relative isolation and non-application or unsocial application associated. In another we may have higher productivity under social conditions, group activity and production and social responses associated. It is quite possible, under the latter conditions, to establish a civic or social set whereby the individual could be trained to group response in the interest of increased productivity, which is always a pleasurable thing, and thereby work toward an elimination of the hesitancy, uncertainty, etc., that characterize so many people.

It is not what one knows that will make him a good citizen. It is what he will do with that knowledge that will make him either a good or a bad citizen. A civic training such as the foregoing suggests would interfere with individuality to the least possible degree, would place no obstacles in the way of natural superiority, and, on the other hand, it would provide opportunity for the relatively inferior to demonstrate some degree of personal excellence, to share in the success of his group and to effect a very desirable compensation. For all it would provide opportunity for activity, spontaneous association and the development of desirable attitudes. Of course, in practical application it would be necessary to take account of development and mental levels, etc.

VI

In the foregoing pages we have developed the following points:

1. Training is a more reliable basis for civic education than instruction, and training in the form of varying degrees of pupil self-government and group work has been developed in progressive schools with good results.
2. Group work has for some time been recognized as a stimulus to individual activity. The experiments at Grafton and the results of the two group association tests, Alpha and Beta, indicate that it is also a stimulus to an attitude of social response.
3. The use of these tests has thus produced a specific contribution in the form of objective evidence regarding the social value of group work. It has also shown, as a further contribution, that civic or other factors may be measured in their effects or inter-relationships by such group association tests if care is exercised to secure a large enough number of cases and to interpret data properly. The value of these tests, especially when their results are treated by biometric methods, has been demonstrated by the results we have secured.
4. Group work, to be most effective, should be so organized that the individual may be a member of many groups in order to provide the individual with the proper stimulus to enlargement of social horizon without encouraging social precocity.
5. Psychological studies of the conditioned reflex, mental set, and related phenomena indicate that pupils should be trained in social response in order to establish proper effective reflexes and to avoid anti-social inhibitions.

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THE PRE-SCHOOL HYGIENE OF HANDICAPPED CHILDREN*

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A considerable proportion of the handicaps of school children are inherited and a very large fraction of those not inherited are acquired in infancy. This means that hygiene of handicapped children must have due regard to the pre-school years. The importance of these years has not received full recognition. Here, as elsewhere, the pre-school period is relatively neglected, often by parents, more often by the state; and provisions for handicapped children of pre-school age have only, to a limited extent, become part of public policy.

The significance of the pre-school years will be briefly indicated for each of the eight major classes of handicap found among school children. No attempt will be made to cover the medical technicalities of this broad subject; but some suggestions of a practical nature will be ventured. Although we lack the funds and the administrative equipment to do full justice to the handicapped child of pre-school age, much can be done even with present facilities to improve his status and his outlook. It is important that baby welfare agencies, public health nurses and social workers should do more to direct parents in the proper care and training of handicapped infants. It is important that public school provisions should gradually penetrate downward into the nursery period of these children who are peculiarly in need of special educational treatment.

I. Blindness

From a statistical point of view the problem of blindness in the pre-school period is not so great as it is in later years. Indeed blindness is peculiarly incident to adult and old age. Only 1% of all the present blind are under five years of age; but from the standpoint of educational hygiene which must always regard the individual rather than the mass, this small group of blind, young children is extremely important. Moreover, from the standpoint of causation, the pre-school period

*This discussion is part of a broader treatment of the subject to be published in a volume on "The Pre-School Child: From the Standpoint of Public Hygiene and Education." (Houghton Mifflin Co., Boston.)

is very significant. One-third of all cases of blindness occur before the age of 21; and over one-half of the cases occurring before that age come before the fifth year, and over one-third before the first year of life.

About four-fifths of blindness is ascribable to diseases, and in about one-tenth of all the cases there is an hereditary factor at the basis of the disease or the blindness. Best has studied the distribution of the blind by the most important causes, according to the age of the loss of sight, and found in substance the following results: In congenital blindness the leading causes are malformations, ophthalmia neonatorum, atrophy of optic nerve and hydrophthalmus. During the first year of life by far the most important cause is ophthalmia neonatorum. Other causes reported are sore eyes, hydrocephalus and brain fever, cataract and corneal ulcer. From the first to the fourth year, external injuries are in the lead, with meningitis, measles, scarlet fever, "sore eyes," small pox, cataract and atrophy of the optic nerve as minor causes. External injuries include accidents and other injuries from burns, firearms, sharp instruments, like scissors and knives, explosives, flying objects and falls. About 20% of the cases of blindness occurring in the pre-school years from one to six are apparently due to such injuries. A greater amount of prudence on the part of parents would undoubtedly reduce the amount of blindness from this source. The safety first campaign has further conquests to make in this field.

Ophthalmia neonatorum, an inflammatory disease caused by the gonococcus germ, is yielding somewhat to preventive endeavor. Forty states now have laws making it obligatory to report inflammation of the eyes in the new born. Many states supply a prophylactic solution free by statute or by health regulation. In some states there are special protective measures relating to the practice of midwives. With proper enforcement these laws unquestionably bring results. The disease has shown some decline; but by no means enough to justify any relaxation of effort on the part of health officers, nurses and physicians.

In addition to the general compulsory education laws, there are special applications of the laws to the blind in over one half of the states of the union. These laws, however, do not give recognition to the very great importance of the pre-school period; indeed in many cases they specify the educational period to be so many years after the age of seven or eight, etc. Nevertheless, the pre-school years are in many respects the most important in the education of the blind child. It is so easy to make the child in this period the victim of unintelligent

compassion or of positive neglect, and to plant into his growing character traits which it will be difficult for later re-education to eradicate. Much of the unnecessary dependency of the blind, many of their psychological peculiarities, and their mannerisms (the so-called "blindisms") are the outgrowth of faulty training in the pre-school years.

Dr. Saemisch has therefore made the following general rule for parents in the management of their blind babies: "Treat the blind child exactly as if it were a seeing child." This is a safe rule, with a few reservations which common sense will supply. The important thing in the rearing of a blind child is the protection of his personality. This must be made strong, self-reliant, happy. He should therefore learn to walk at a normal age, even though he gets bumps; he should romp, and explore and play with toys; he should be as active in body and as investigative in mind as a seeing child. He should learn to dress and undress, comb his hair, take care of his person and possessions; keep himself clean; and acquire agreeable habits of deportment. He should not be made conscious of his handicap; but rather of his obligation to take a normal place, with normal responsibilities, in the family life. These are the primary lessons in the formation of his character, and they can be learned in a good home.

If the home is such that these lessons cannot be learned, the child should be boarded out in a competent home, or attend some nursery or kindergarten, or he should be placed in the nursery department of some institution for the blind. A considerate, responsible, domestic home, however, is, for educational reasons, to be preferred to a merely custodial asylum.

The needs of the pre-school blind child are so vital that there is room here for the development of a new kind of home teaching service. This service as now conducted by state and private agencies is mainly confined to those of adult life; but it should be directed also to the parents of the blind babies and to the infants themselves. Lacking such service it is incumbent on nurses, social workers and visiting teachers to impart and to apply these important elementary principles in the mental hygiene of the visually handicapped.

II. Deafness

Deafness is in a double sense a problem of the pre-school period. Unlike blindness, the vast majority of the deaf acquire their handicap at birth or during infancy. Figures presented by Best give the following percentages for the differ-

ent ages: at birth, 35.5%; from birth to 2 years, 16.9%; from 2 to 4 years, 17.1%; from 4 to 6 years, 7.3%; making a total of 76.7% for the pre-school period; and only 23.3% for the whole span of school and adult life. In other words, three out of every four of all deaf individuals are so handicapped before their sixth birthday.

Of the 35.5% of cases which occur at birth a large proportion are strictly hereditary, and probably in the majority of these instances some parental or ancestral deafness will be found. The reduction of these hereditary cases will depend upon the gradual adoption of eugenic safeguards.

Nearly all the remaining cases arise in infancy or early childhood and are due to infections of the middle ear or of the internal ear. The chief causal diseases are scarlet fever and meningitis. Other diseases which together swell the total are brain fever, typhoid, measles, catarrh, diphtheria, whooping cough and influenza. The reduction of this group of cases is plainly dependent upon the growth of medical prophylaxis; and the control of complications in those diseases where prevention fails. The major enemies that close the Ear Gate of the City of Man Soul are bacilli.

As in almost all physical handicaps the most important consequences are of a psychological character, and have to do with the mental welfare of a personality. The most serious of all these consequences are those which concern the production and interpretation of speech; and these are important because they have such a direct influence upon the social life of the deaf. It follows then that with the deaf, as with the blind, we should so far as possible treat the child as though he were normal, make him active in mind and body, and give him full opportunities for companionship and responsibilities. The importance of preserving the health of personality is the strongest argument in favor of the use of the oral method (as opposed to the manual sign method) in the training of deaf children. By means of this method even the congenitally deaf child can acquire some degree of speech; and the semi-mute child who has acquired his deafness after he learned to talk is enabled to retain and to perfect his speech. The same method assists both the deaf mute and the semi-mute to read through sight the speech of others. The psychological importance of developing these speech abilities along natural lines need not be argued.

The most favorable time for giving instruction by the oral method is in infancy and early childhood; before the customary age when deaf children are sent to institutions. The ideal arrangement for such instruction would be in kindergarten or

nursery establishments; and our day classes for the deaf, which are increasing rapidly in our public schools, should make every effort to secure their pupils before the legal compulsory school age. The public schools are apparently in a better position to reach down into the homes and into the infancy period than are state institutions; so the former as well as the latter could develop a type of home teaching which would be of incalculable service to parents and children. Even illiterate parents have sometimes used the oral method with success; and it has been said that the most skillful lip readers have been recruited from those homes where mothers have persistently and consistently used this method from the time the baby suckled in their arms.

The pre-school period is pre-eminently the period of language development for normal children, and for this very reason it must also be the most promising period for the oral education of the deaf. Teachers, social workers and nurses may guide parents to better utilize these precious years in behalf of the deaf and semi-deaf. They are also sometimes needed to reveal the presence of deafness where it is not suspected. As Cornell says, "No one has ever recorded that a small child of his own initiative complained of inability to hear."

III. Crippled Children

We consider a child crippled when he is handicapped because he lacks the normal use of skeleton or skeletal muscles. This handicap, like deafness, occurs more frequently among children than adults. One-fourth of the whole crippled population, as shown by the Cleveland Survey, are under 15 years of age, and in over one-third of all the cases the disability originated before the age of 5 years. About one-half of the disabilities due to defect of foot or leg occur before the age of 6. It is evident that the problems of prevention and treatment involve to a considerable degree the pre-school period.

A careful analysis of the statistics of causes among the children of Cleveland shows that infantile paralysis is by far the most important factor, accounting for 41% of all the cases. Tuberculosis of bones and joints comes second, accounting for 15%. These two diseases are, therefore, responsible for well over one-half of all cases among children. Fortunately both diseases yield in some measure to preventive control; and skillful medical and surgical care can ameliorate their consequences.

The primary importance of timely medical attention must always be emphasized. Parents and social workers, however,

often make the serious error of placing exclusive stress on the medical and surgical aspects. The error is serious, because it means the neglect of mental and educational hygiene. Although everything should be done to reduce or remove the handicap in a physical sense, our ultimate objective ought to be the training of the child so that he will be a healthy individual in the psychological sense. For if his personality is not distorted or crippled he may still be a useful and happy member of society. The elementary lessons in character formation begin in the nursery period. It is easy to spoil a child in this period; and if he needs, as so often is the case, a somewhat prolonged treatment in an institution, it becomes doubly important that he should not be spoilt, but should acquire habits of self-help, attitudes of self-reliance and a spirit of conquest toward his physical defect. Fortunately, at least three out of four of all crippled persons over 15 years of age are probably capable of profitable employment alongside normal persons.

The war has made it clearer than it has been before that the final handicapping effect of disability depends often upon the morale of the individual. Indeed, physical failure if not too extreme may actually be the stimulus to a development of intellectual and spiritual power. Adler states this theory of mental compensation through the intervention of the nervous system in these general terms: "The realization of somatic inferiority by the individual becomes for him a permanent impelling force for the development of his psyche." If re-education can build up the morale of a soldier so that he can successfully or even triumphantly carry his disability, it follows that judicious education in the morale of physically defective children will have a preventive, hygienic value. Morale has been described as a kind of mental preparedness. This policy of preparedness should include the pre-school years, which are often of critical importance.

IV. Physically Defective Children

This term has been used for convenience in a previous chapter, to include all children so seriously handicapped by malnutrition, cardiac defect or chronic disease as to be urgently in need of special hygienic or educational arrangements in school. The term loses even this precision when applied to children of pre-school age. It is, however, profitable to ask to what extent is the physical defectiveness of school children traceable to the pre-school period? This simple question has not been adequately reckoned with. Indeed the future developments in the fields of Medical Inspection of School

Hygiene, and of Social Pediatrics, cannot be intelligently directed without a frank acknowledgment of the fact that a large proportion of the physical defectiveness of children originates in the pre-school stage of childhood.

Malnutrition has recently come to the foreground as a handicap of basic importance; and at present it is being attacked through nutrition classes and educational measures. This is a splendid work; and yet the fact remains that a very large percentage of these numerous undernourished pupils were undernourished before they entered school. And furthermore an equally large number of candidates for the nutrition classes three or four years hence are undernourished toddlers now. The logic of the situation needs very little elaboration. The most important field for the extension of nutrition hygiene is "the gap" between the milk station period and the first grade. The following statement was applied to Scotland, but it is still true enough of other countries to merit quotation here: "The baby, if he lives, receives a certain amount of daily care in feeding, washing and clothing, and the school children are made ready for school; but the toddlers from two to five are nobody's care."

Dr. W. R. P. Emerson has listed the following factors as jointly responsible for the clinical picture of malnutrition as found among school children: 1. Diet; 2. Health habits; 3. Rest and fatigue; 4. Home control; 5. Special physical defects. It is clear that none of these factors is peculiar to the school period. There are, of course, certain cases which are caused or exacerbated by vicious school conditions; but these are probably more than offset by cases in children of pre-school age, which have not enjoyed the normalizing influence of school life. We should, therefore, be attacking the problem of malnutrition more nearly at its source by reaching the children in their pre-school years. It would not require very revolutionary changes in the present technique of infant welfare and public school work to accomplish the results. Pre-school clinics and children's health centers are pointing the way.

Another phase of the great problem of malnutrition is rickets. This common disorder concerns the pre-school period peculiarly. Frequently it dates back to the foetal stage of development, and it is most characteristic of the ages from 6 months to 18 months. Although there is still some obscurity regarding its true origin, recent studies have shown that it is clearly a disturbance of nutrition; and one which will yield to control in a large scale through systematic measures, including cod liver oil and heliotherapy. Such preven-

tive control will not only reduce the handicap of rickets, but the rachitic complications which increase mortality and later morbidity.

Still another aspect of the same great problem of nutrition is represented in dental caries, by far the most common defect in American children. One of our best authorities who has worked on a large scale with school children and who in the beginning placed great stress upon the importance of cleanliness of the teeth, has come to the significant conclusion that the most important factor in the causation of caries is dietary, and that "correct feeding of a child from birth to 12 years of age would in itself partially, if not wholly, eliminate dental decay."

The development of the teeth indeed presents a pretty example of the importance of the pre-school period—and of the temptation to ignore that importance. The cusp or biting surface of the sixth year molars are formed before the child is even born, and the enamel organ for the wisdom teeth is formed as early as the third year of life. It is quite in harmony therefore, with the facts of embryology to suppose that the nutrition of mother, infant and child is a decisive factor in determining the vitality of the teeth. Probably the most foresighted and the most thrifty method of dental hygiene is the improvement of the nutrition of children with milk teeth.

A manual in pediatrics would be required to review all of the chronic and acute diseases which handicap early childhood. Statistical tables analyzing the causes of mortality, and less complete statistical data showing the age incidence and frequency of diseases, reveal with quantitative emphasis the significance of the pre-school years for bodily health. Medical inspection and health supervision of school children are only completely justified when based upon an adequate preventive program of health supervision of the pre-school period.

V. Mental Abnormality

In its broadest sense the term psychopathic includes all forms of mental abnormality, not only the definite mental diseases (the psychoses) which come to the attention of the court and the physician; but the less pronounced disturbances which express themselves in various forms of "nervous" invalidism and mental inefficiency.

On first impression no problem would seem to be more remote from the scope of pre-school hygiene than that of "insanity." Senile dementia seldom occurs before the age of 60; involution melancholia seldom before 40; over half of the cases of general paralysis are seen between the ages of 35 and

50; of all the cases of dementia praecox and manic-depressive psychosis, more than half develop before the age of 30 (Rosanoff). From statistics it appears (in New York) that only one psychotic child under 15 is admitted for hospital treatment per 200,000 of population. Furthermore, a considerable proportion of the various insanities are caused by such factors as hereditary predisposition or transmission, alcoholism, syphilis, drug addiction, and head injuries.

A closer analysis of the situation will, however, reveal that there is an important group of mental disorders, the psychoneuroses (the hysterias, neurasthenia, psychasthenia) and certain forms of dementia praecox, in which environmental and educational factors play an important rôle. In many of these instances, the origin of the conditions may be chiefly psychogenetic, and the date of genesis may go back to very early childhood. This must also be true of innumerable borderline conditions, in which the individual does not manifest a frank psychosis, but is maladjusted, and inadequate in his social behavior. It is disorders and deviations of this character which are most subject to control, and will respond to preventive and ameliorative treatment. It is in this domain of mental hygiene that the pre-school period again asserts its fundamental importance.

It is unnecessary to accept uncritically the doctrines and interpretations of psycho-analysis; but we are compelled to recognize the justice of an emphasis upon infancy in any dynamic or behavioristic type of psychology. We must at least subscribe to such a conservative statement as the following one from the well-known British psychiatrist, Dr. Richard Rows. The statement occurs in an address on "The Biological Significance of Mental Illness" made at the recent celebration of the one hundredth anniversary of the establishment of the Bloomingdale (New York) hospital.

"Of special importance also are the experiences of childhood. An unhappy home or unjust treatment as a child may warp the development of the personality, lead to a lack of self-confidence, to the predominance of one emotional tendency, and so prevent that balanced equilibrium which will allow a rapid and suitable emotional reaction such as we may consider normal. This may lead to a failure of development or a loss of the sense of value, because the existence of one dominating emotional tendency so often produces a prejudiced view which may render a just appreciation of our general experience almost impossible and may seriously disturb our mental activity" (p. 110). Rows, himself, illustrates the truth of this by describing the case of a mentally ill woman

in whom "the germ of her serious breakdown thirty years later was laid in her fifth and sixth years."

In somewhat the same strain, Freud has said, "The little human being is frequently a finished product in his fourth or fifth year and only reveals gradually in later years what has long been ready within him."

To give the broad psychological principles above suggested immediate practical application would be a prodigious task, because it would involve the re-education of countless parents who are unconsciously moulding the character of their children in the pre-school years. But if the principles are true they must at least guide us. They will serve to place in a new light the responsibility and power of the home; the great value of all social work which improves family welfare, and the importance of recognizing psychoneurotic symptoms in their earliest stage. Such symptoms are often overlooked and "dismissed as signs of badness or naughtiness." According to Freud, neuroses in children are far from rare and most frequently take the form of anxiety hysteria. Whether the symptoms come to clear clinical expression or not, there is only one safe rule. We must have a respect for both chronic and episodic abnormalities of conduct even in young children, and should shape our nurseries and kindergartens so that they may serve a more premeditated function in the field of mental hygiene.

VI. Delinquency

The general observations made with reference to psychopathic conditions apply to the problem of delinquency. The whole subject is so complicated that very few generalizations may be ventured. Frequently crime has an entirely adult setting and background; but it is coming to be recognized that many adult delinquents were juvenile delinquents and that the most promising field of prevention is that of juvenile delinquency. Here again the causation factors often appear to be peculiar to adolescence; but frequently also the genesis of the delinquent career can be readily traced to the period of childhood, preceding adolescence. The history of the case reveals prodromal symptoms at the age of eight and nine; and we are justified in saying that the potential delinquent boy of that age is a particularly promising subject for reform or guidance.

Now, whether the delinquent traits in many of these cases could be traced still further back to the pre-school period is a fair problem for consideration. The concept of delinquency when applied to very young children may only confuse us and

obscure the true facts; but the concept of character formation is one which cannot be pushed too far back. Character in the psychological sense, and even in the ethical sense, has roots which go down to the cradle. The elementary lessons of obedience, inhibition, poise, self-control, are normally learned in the nursery period, just as elementary speech is then acquired. The child does not learn all he is ever going to say in that period; but the instrumentality and to no small extent the very manner of his subsequent speech are then established. So in the field of conduct. Social attitudes, personal prejudices and predilections, and the balancing of emotional tendencies are in broad outline determined before school entrance. Later delinquencies may be but symptoms of irritabilities and inharmonies which date back to an abnormal home life.

This is all vague enough, and common sense must save us from errors of emphasis; but kindergartner, nursery matron and parent should have due regard for persistent behavior anomalies and conduct disorders of the pre-school child. Such symptoms may have a prognostic import.

VII. Speech Defects

Speech defect is unquestionably a problem which concerns the hygiene of the pre-school period. This period is preeminently one for the acquisition of oral speech, the most distinctive and in many ways the most complex of human accomplishments. From the first birth cry to the busy questioning and sound plays of his kindergarten years, the normal child is steadily engaged in the task of acquiring the elementary technique of speech and of language. Instinct aids him, evolution has imparted to his nervous system both the propensity and the capacity to talk; but to no small extent speech is an art which has to be learned anew by each individual. It is not purely automatic, and full perfection comes to but few.

Mild imperfections of speech and deficient voice control are extremely common; and over 2% of all school children are reported as being speech defective. Sometimes these defects have been attributed to faulty school hygiene and to unwise methods of teaching spelling and reading. There is no doubt that our public schools have very much neglected standards of oral expression; but there is good evidence that the overwhelming proportion of speech defects originate in the pre-school period. Wallin, who made an extensive census of speech defects in St. Louis school children, found that 81.4% of all

the cases of stuttering began before the age of 6; only 15% between the ages of 6 and 10; and 3.4% after 10. The figures for lisping emphasized even more strongly the significance of the pre-school period. The term lisping was used in its technical sense to include all forms of faulty articulation, inabilities and difficulties of pronunciation, slurring and sound substitution. It was found that 96% of the "lispers" began to lisp before the age of 6; 3.2% between the age of 6 and 10; and .8% after the age of 10.

Combining these figures we are compelled to recognize that at least 15 out of every 20 cases of speech defect originate in the pre-school period. These defects are not, of course, equally important. Stuttering is usually much more serious than lisping. By stuttering is meant an uncontrolled or spasmodic repetition of sounds, syllables or words. About 5 children out of 1000 are affected with mild stuttering and 2 out of 1000 with stuttering of severe character. About 15 more children are affected with various forms and degrees of lisping.

It is difficult to analyze briefly the different causes for these speech defects. In stuttering the following factors may operate singly or in combination: nervous shock; intense fear; anxiety neurosis; exhaustion diseases; neuropathic disposition; imitation. Mental factors are very important and one authority has gone so far as to describe stuttering as "a diseased state of mind which arises from excessive timidity." Another writer refers it rather vaguely to an abnormality in the "region of personality."

Only a very small proportion of all speech defects can be ascribed to malformations of the speech organs or to specific paralyses or to tied tongue. Practically all cases of "lisping" are functional in character, due to subenergetic phonation, absence or faultiness of imitative standards, lack of ear conscience, persistence of baby talk, lack of physical tone and lack of emotional tone, defective breath control, etc.

It is difficult to generalize in this field; each case, whether of stuttering or lisping, is individual. It may have a medical aspect; but usually the problem is one of education or re-education, and often the approach is indirect. Fortunately most speech defects are definitely curable, and many are as definitely preventible. It ought to become part of our general Americanization program as well as general health program to insist on better opportunities for conversational English in the early years of childhood. Surely primary teachers ought not to hasten their pupils to read and write before they have really learned to talk; and kindergartners should

make oral expression one of the chief objectives of their educational program. If nurseries and kindergartens meet the responsibility which is before them in this important field, they will not only improve the speech of all of their immediate charges but may aid in the development of corrective measures which will reach the speech defective while still pre-school age. Timely recognition and timely treatment here as elsewhere make for larger results at a smaller outlay.

VIII. Mental Deficiency

Nearly all cases of mental deficiency are recognizable and become established before the age of six. In about three cases out of four the causal factors are hereditary; in one case out of four we have to reckon with some inflammatory or toxic disease, or some traumatic damage which usually occurred at birth or early childhood and brought about an actual destruction of brain tissue or an arrest of its development. Feebleminded-ness is always associated in some way with an incomplete development of the cerebral cortex.

The control and treatment of feeblemindedness, therefore, must take due account of the pre-school period. The wisdom of ample public school provisions for mentally deficient pupils is becoming gradually more evident. It serves no purpose to emphasize the fact that feeblemindedness is incurable. It is more important to recognize that most feebleminded children respond to the right kind of training and that with certain readjustments and safeguards they can maintain a place for themselves in community life. It is one of the functions of the public school system, both through state and local agencies, to provide special occupational training and perhaps even to assist in the vocational guidance and supervision of pupils who have had this training.

Inasmuch as proper training has unquestionably demonstrated its efficacy in the case of the mentally deficient children, it is natural to ask whether we can afford to neglect as completely as we do the pre-school development of these children. The present tendency is to delay their school entrance. They are usually slow to hold up their heads when babies, slow to sit up, to walk and to talk, and likewise slow to go to school. If a zealous parent enters a defective child in kindergarten at the legal age, the child is frequently sent home to wait another year; and even the special classes may exclude such a child on the plea that he is too young, and that he will be more ready in a year or two.

It may be questioned whether this policy is altogether

justified, at least from the viewpoint of the educational psychology of the feebleminded. Would it not be educationally advantageous to furnish a sub-kindergarten type of training for the mentally subnormal in their nursery years? These are the years when they are most likely to be neglected or misunderstood. The defective child from three to six years of age frequently gets severe corporal punishment because he is not understood by his own father and mother; and it is during these years that he may be peculiarly troublesome at home. Sometimes the situation drifts into one of unconscious cruelty to the child and extreme vexation for the parent.

Many a mother who will not and probably should not send her defective child to an institution is entitled to some form of community assistance. More should be done to provide nursery facilities for subnormal children, and by concrete guidance to aid the mothers in the task of caring for such children at home. Too frequently diagnosis and advice are not forthcoming until the child has become of school age. This fact, which I have often observed in my own experience, betrays a serious defect in our present administration of child hygiene. Feeblemindedness is a developmental defect which, no less than rickets, should have the benefit of early diagnosis. To be sure we cannot cure feeblemindedness, but by timely diagnosis we can bring it under better control and may render a service to parent and child alike. And how much we could do in an educational way by giving more systematic attention to the pre-school years of the defective child, no one knows.

The net results of this survey of the status of the handicapped child of pre-school age leads to a few general conclusions and suggestions. It appears that he is in a somewhat precarious position and that he may become a victim of hardship and sometimes of actual injustice. He has no school status; and in a legalistic sense he has no educational rights, even though he may be peculiarly entitled to them. Whether he will receive medical attention will depend upon the quality and severity of his handicap and the perception of the physician. The psychological and educational aspects of his condition are in danger of being ignored, even when his physical welfare is not neglected. A careless faith is placed in the vague formula that he will outgrow his difficulties as he gets older.

Imperfect as our knowledge is concerning the development of young children, it is in advance of our provisions for their welfare and this knowledge should be more deliberately applied as part of our social policies. In the effort at application we

shall come nearer to a solution of the problems involved. We should develop a specialized type of nursery and kindergarten service, which will be neither purely custodial nor conventional, but which will aim by educational procedures to reduce developmental handicaps; and demonstrate how similar measures can be introduced into the home. Even one specially trained expert kindergartner in a large city could render incalculable benefit to mothers of defective pre-school children, through methods of conference and demonstration.

The problem after all does not involve a staggering institutional program, but is one of engineering and requires a special adaptation of the same technique which is being so successfully worked out in the field of the visiting nurse and the visiting teacher. Public health nurses should in general be better trained to perceive developmental defects of young children and should play a more active part in this new kind of family welfare work.

A consecutive health and development supervision of preschool children, the hygienic regulation of school entrance, and a special adaptation of nursery and kindergarten methods in behalf of exceptional children, educational social workers in the field of infant welfare, and special mobile teachers for home visitation and home training—these are some of the possibilities which a public mental hygiene of the future may have in store.

EDUCATION IN CHENG TU, SZE CHUAN

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Introduction

The city of Cheng Tu, far out in Western China, stands for a type of city as yet not much under the influence of the Occident. Factors that are very strong in education, business and outlook in the coast cities have penetrated to Cheng Tu only in weak or much diluted form. For this reason, it seemed worth while to take stock of the whole educational situation in Cheng Tu before the inevitable changes come, and to put on record the status of the school system in its first steps of transition.

Cheng Tu is over 650 miles in a bee line from the nearest coast, 1,000 miles from Shanghai measured in the same way, and 1,500 to 1,600 miles the way one has to travel from Shanghai. It is 1,000 miles from the railroad at Hankow, its most direct outlet, and some 360 miles from the railroad at Yun Nan Fu over rugged mountains and difficult travel by chair. This latter is a little used route. Cheng Tu is nearer in miles to the railroad terminus of India at Myit Kyina than to that at Hankow, but the rough mountainous country between, and the absence of any transportation but chair or donkey, makes this connection of little value. Its road out is either down one of two or three small streams to the Yangtze, and down the latter to the coast, or overland ten to fourteen days by chair to the river at Chung King or Wan Hsien and then down the river. Roads north, west and south only lead deeper and deeper into the wilds of mountains or deserts. These are the reasons for the isolation of Cheng Tu and in part for its present status in education.

In spite of its not being an open port, there are three consulates in Cheng Tu; and some foreign business houses have offices, managed, however, by Chinese operators. Then the missionary societies doing work in West China have many representatives and some headquarters here. These items are in large measure responsible for her forwardness, as compared with other cities equally isolated in Sze Chuan.

Cheng Tu is an old city. Evidence of its ancient origin and humble beginnings is found in the multitudes of graves and in the buried foundations, coins, pottery and implements

uncovered in excavations within and around the walls. It has long been a provincial capital with traditions and a pride in the past. But with all this tendency to look backwards, Cheng Tu is a city, prosperous and distinctly forward looking. It is situated on the fertile and constantly renewed Cheng Tu plain which is still abundantly blessed by the great Kwan Hsien irrigation system, installed 150 years B. C. In these favorable conditions, the city has grown to a size comparable with Cleveland, Detroit or even Boston. Her population is not known, and a census as America takes it is nearly or quite impossible; but there is little doubt that there are 700,000 people living in Cheng Tu. There may be 40 or 50% more.

Cheng Tu has, around most of her people and business, an ancient stone-and-earth wall with four great double gates which close every night at dusk to keep out marauders. Many streets are paved with flat slabs of sandstone, but they are dirty and, when wet, very nasty. Most of them are narrow and overshadowed by awnings of mattings, by tile, or by some other material which prevents their drying out. In her central part is the old Imperial City, occupying about one-ninth of the city. This in turn is walled about, thus shutting it off from the life and rush of the business streets, and is divided by walls into more or less separate compounds.

The commerce of the city is done mostly on carrying-poles across men's shoulders. The small streams outside the south and east gates have many small boats and float great quantities of eatables and building materials, also many goods from the west and north coming here for transhipment.

Thus in many ways Cheng Tu is modernized, alive, active, progressive, and in other ways retarded, conservative, effete. Her school system is fully in accord with these characteristics as a city. It is related to them; a product of the same factors which have produced the city and all its contradictions, inconsistencies and incongruities.

The Range of Schools

The school system of Cheng Tu embraces opportunities for the student of every grade. There are kindergartens, primary and middle schools, normal schools, colleges and a university, for men. And for women there are the same from the lowest up through the middle and normal schools, but really nothing of college or university grade. The national government and that of the province and the city support many schools. Several private schools exist. Missionary organizations have schools of all grades. From middle or high school up, both technical and general education are provided.

Some of the newer schools are very good from a western point of view; some are bad. Some, too, of the old Chinese classics type are good; some are very poor. Some of them look much better on paper than they really are. Often they change from good to poor or the reverse; and the same school may be quite modern in its methods and tone one year, and within a year or two be as distinctly old style and eastern, or the reverse. No system of inspection or of supervision of quality of work exists outside the foreign schools. As President Beech of the West China Union University says, "Chinese educational matters are so kaleidoscopic at present that it is hard to keep track of them." One cannot say anything about them as true or untrue unless it be carefully dated and placed, for they are generally unsteady.

Primary Schools

Under this heading will be discussed the kindergartens and the Lower and Higher Primary Schools, everything below the Middle or High School, whether it be a government, private or missionary enterprise.

Starting with the kindergartens, three such schools have been organized and operated. Two are in the hands of the Canadian and American Methodist Missions respectively, and are for both boys and girls. They are conducted purely for the good of the children and their mothers. In some cases, a child thus cared for relieves the mother for work she could not otherwise do. The third kindergarten is much larger[1] and is a part of the system known as the First Provincial Girls' Normal School. It is exclusively for girls and seems to serve as a sort of model for the prospective teachers who are in training in the normal school. It is not used as a practice school, although it is held in close connection with the higher grades and under the same general supervision. President Liu, an executive of high order and a man of vision, is in charge of the system. The games and play, as in most government kindergartens, are essentially Japanese and not Chinese or European.

Lower and Higher Primary Schools cover four years each and pass the pupil into Middle or High School. The government provides four complete Primary Schools in Cheng Tu, each offering the full eight years of instruction. These are conveniently located in various parts of the city, taking their names from their locations. For administrative purposes, the city is a metropolis of two *hsiens* or districts, corresponding roughly to the American county. Consequently, for school

[1]For statistics see tables at the end of the paper.

purposes the city is divided into these two districts, Cheng Tu Hsien and Hwa Yang Hsien. Each *hsien* maintains a Lower and a Higher Primary School in the city. These are not as large as the provincial schools, but like them are for boys only.

These four government and two *hsien* schools spend much time teaching the characters themselves, i. e., their sounds and delineation, and some time in reading easy texts in them. The fundamentals of arithmetic, and the Chinese classics and history are presented also. Government readers are used throughout. These readers have simple selections from Chinese classics and history, old stories from other nations, and especially hero stories but with very little of mythology and folk lore. Most Chinese pupils adore Washington and Lincoln and know the hatchet and pig stories. The pupils are taught some nature study, handwork and music. The handwork includes cutting wood and making simple things of paper and wood. They often make decorations for their schoolrooms or even for the home, to be used on gala days. The music is largely Japanese, but several American tunes with Chinese words and poems are much used. "John Brown's Body" and "Marching Through Georgia" are the favorites. The writing of letters, business and social, and the preparation of essays and themes come in the Higher Primary. Hygiene is usually taught very well; not anatomy, but food problems, personal care of the body, sanitation, and health and sickness problems are discussed. Physical training is taught generally in a very serious fashion, influenced strongly by Japanese methods. Even the goose step from the Germans through the Japanese is practised. The use of Japanese methods and material does not come in through preference, but because no other way is known. At present, the administration would surely welcome some other plan.

Cheng Tu has four somewhat special schools of primary grade which resemble private schools. They have "pet names," i. e., names given them as special institutions. One is called, when translated, "Youths Strengthen the Country School." The translation of the others has not been obtained, but they are probably something on the same order. Their curricula are much the same as those of the government schools already sketched, i. e., the Government Curriculum or System of Education put out by a commission at Peking for the schools of the nation. Three of these schools are for boys and one for girls; the latter usually has over one hundred pupils.

For girls, the government provides a school in Cheng Tu of both Lower and Higher Primary grade, called the Yang Shih

Kai School, which is well patronized. The Cheng Tu and Hwa Yang Hsiens each provide a primary school too. But the finest girls' primary schools under Chinese administration are no doubt those in the First Provincial Normal School for Girls, directed by President Liu. Here is a Lower Primary of 66 girls used as a practice school (Fig. 1) for the girls in the Normal course and a Lower Primary of over 400 girls who are given the best possible instruction as a sort of model of what should be done. The Higher Primary is not over 30% as large, but is equally efficient. The place (Figs. 2, 3) is as neat and clean as an American garden, with plants, trees, shrubs and beds of flowers; and the buildings are very attractive, clean, light and airy, and in a fine state of repair. Quite a number of the girls are from out of town and are provided with dormitories in real boarding-school fashion. If any of the girls come with bound feet, the feet must be unbound and put on the road to recovery and soundness, before the little lady can be admitted to work.

In these girls' schools the curricula are essentially the same as in the boys' schools. Among the handwork courses, crocheting and sewing are taught. A child's whole outfit of clothing is made in the Higher Primary, by each girl. Even the use and care of the sewing machine are taught.

Two more schools of the above grade, but for boys, should be mentioned before turning to the Missionary organizations. The Cheng Tu Teachers' College or Higher Normal School maintains a supplementary Lower and Higher Primary as a practice school. It is in the same general compound as the College and Middle School, the old imperial city, but in a separate compartment. There is a dormitory section for boys from out of town. The Government Curriculum is well administered here. It is used essentially as prepared, but slightly modified in places. In the Lower Primary, one teacher supervises the first and fourth grades, and another has charge of the second and third. In the Higher Primary, one teacher is allotted to each grade for supervisional work. Some departmental work has been introduced, a teacher taking the same subject through several grades. The other Primary is in the First Provincial Normal School, where the eight grades are maintained as a practice school for the young men in the normal course, and is a fairly efficient school also.

Five Missions maintain Primary Schools for boys, and four of them also have separate girls' schools. Minor adaptations in physical training and in handwork are about all the differences in curriculum. In connection with the Union University and its Normal School for boys, there has been established a

Dewey Practice Unit for Lower Primary boys. They have a beautiful court and group of Chinese buildings outside the south gate and near the university. The seniors in the Normal School get their practice teaching here under careful foreign supervision, so the small boys really have very superior instruction.

Where the statistics are sufficiently analyzed to show the point, the enrollment in the Higher Primary is much less than in the Lower. This condition holds in all the Primaries of the city. The loss or break, however, is not at the end of the fourth year, but after the second and third years. As soon as a boy is old enough, 8 or 9 years, to have any economic value, his time is worth more to his parents and the family purse than it is to him, at least in practice, and he is kept from school and put to work. If it could be shown that the few years more of schooling would notably increase the lad's efficiency, he might be allowed to stay. This points the way for the schools that desire to turn their attention to vocational courses. Put in the manual training early and introduce such things as the boy can do when he is out, and yet not become a coolie. Supplement this vocational training with the usual cultural subjects, and in many cases keep the boy in several more years. The dropping out of school is not due to indifference, but to economic conditions. These schools must be kept up to supply boys and girls for the Middle Schools and Colleges if the latter are to be kept full. Illiteracy can never be notably reduced until some way be found to get all the little folks into some school and keep them there at least four to eight years.

The Middle Schools

Middle Schools in Cheng Tu have adopted the English name for the same grade of work to which the American name High School is given. They provide a four-year course well articulated below with the Primary Schools, and above with the colleges.

The Provincial First District Middle School is the largest of all and is supported by provincial funds. It is a boys' school, and furnishes very satisfactory opportunities so far as it goes. Never in China is so much money put into buildings and equipment as in America. The buildings are Chinese, of course, throughout. Some dormitory facilities are available, for quite a proportion of the boys come from out of the city, from market towns and small cities that do not have Middle Schools. Since this is a Provincial School, such outside pupils naturally come to it. There are, however, three other schools in the province of the same type and standing.

FIG. 1. First Provincial Normal School for Girls. Entrance to Primary Departments, with the gateman standing in the distance.

FIG. 2. First Provincial (Government) Normal School. Simple Chinese construction, each room a separate house, with passages, often covered, between. Neat and well-kept grounds.

FIG. 3. Same. On the left a classroom; on the right, gymnasium; plaster walls, tile roof.

FIG. 4. Union Middle School dormitory and gate house. One-half of dormitory shows. Much of lower floor is used as classrooms.

FIG. 5. Same. Court and recitation hall. A row of rooms, each entered from the covered walk along the side. No doors inside; solid walls between rooms.

FIG. 6. Same. Open court, covered walks; wave bridge, consists of a squared log suspended by two chains at each end. The game is to walk it while it is swinging end ways.

FIG. 7. General view of buildings of Union Middle School of W. C. U. U. "Bitou" construction, so common in China. Five or six buildings around a court.

FIG. 8. Same. A single building looking across the court with its stone walks and grass plots. Three or four classrooms in a building. No doors between rooms.

FIG. 9. Dormitory provided by Baptist Mission for Union Middle School. Built of blue-gray brick with tile roof.

FIG. 10. Government Teachers' College for men. Main entrance. This was the inner gateway to the old Imperial City and the court between it and outer gate. Buildings on flanks used for military stables; heaps and ridges of stable waste drying in the court.

FIG. 11. Same. Court and Assembly Hall beyond inner gate. No wall on this south side of building.

FIG. 12. Same. Entrance to Reception Hall. All open on this side except for the screen in front. Windows are lattice with paper pasted over. Tea is served, also elaborate Chinese dinners, behind the screen.

The next Middle School in point of numbers, as also in territory tributary, is the Cheng Tu Union Middle (Figs. 4, 5, 6). Its contributing area embraces sixteen *hsiens* grouped in central Sze Chuan around the capital. Together these *hsiens* constitute the Cheng Tu prefecture, and its chief city was and often still is designated a Fu city, Cheng Tu Fu. This school was established under the Manchu Dynasty, but has been modernized with the new régime of the Republic and the national course of study. Theoretically, it is a modern school throughout. Practically, it uses some older methods more or less intermittently, depending upon the teacher. Inspection and standardization are not enforced in the schools of Cheng Tu, or of China, for that matter. Three per cent of the taxes of the sixteen tributary provinces is designated for this school. A new class enters every semester, which means that eight classes are proceeding through the school all the time, with a commencement at the end of each semester and some forty or fifty students in each graduating class.

The two *hsiens* of the city, Cheng Tu and Hwa Yang, each maintain a Middle School in addition to the one they help support with the fourteen other *hsiens* of the prefecture.

Four cities or, better, a group of citizens from each of these cities now residing in Cheng Tu, maintain Middle Schools at the capital. Some of these schools attain good size; one is quite small: Tze Chow and Sui Fu have the largest. All conform, in theory at least, to the curriculum of the government. These schools are open to any one on payment of a moderate tuition, but are primarily for the boys of citizens of the several cities.

Cheng Tu maintains a small municipal Middle School of about 140 boys, in which the principles of municipal government are emphasized, but even in this institution the fundamental curriculum is adapted from the government system.

Che Kiang, a province on the coast south of Shanghai, has a considerable number of business men in Cheng Tu. These have organized into a Che Kiang Guild, and this guild maintains also a Middle School, primarily for its own boys. The school is small, but is counted among the more efficient.

The technical colleges and schools usually have some sort of an academy or preparatory school, which of course is of Middle School grade. Some of these provide the whole four years' course, but probably give more attention to the upper classes, to which pupils not fully prepared to enter the college, drop back for one or more years of work.

In the statistics of four government colleges, the numbers of students actually in the college and in the preparatory

school are not designated, but we have verbal testimony from the teachers or officials that such preparatory work is provided. These four are the Law, Foreign Language, Commercial, and Agricultural Colleges. Their work is more or less pointed toward the work to follow in the college.

Two of the professional colleges financed by the government maintain well-equipped Middle Schools, whose work is more or less separate, yet closely related to the professional work above. The Cheng Tu Teachers' College thus has a well-organized and equipped Middle School giving a full four-year course. It occupies classrooms and dormitories in the Imperial City, but in separate compartments from the college. Not only does this school take the graduate of the Higher Primary approaching the Teachers' College through the four years of training, but it takes graduates of Middle Schools all over the province and puts them through the last year of its curriculum before admitting them to the college. This insures a more uniform preparation and a higher grade of work in the college.

This Middle School is the only one in the province working on the Dewey plan. In the first two years, pupils take the same work as in other good Middle Schools, but in the third and fourth years they elect their courses in any one of three lines. Literature and arts leads to legal, literary and commercial professions; agriculture leads to agricultural pursuits, if possible, through the Agricultural College; and the industrial course leads to manual training and technical professions. These three courses are but introductory and preparatory for higher college and university work. It is expected that more vocational training will soon be gradually introduced into the first two years.

The Technical College has its own preparatory school, a first-class Middle School located some two miles away, but organized to articulate closely with the college. It is under the provincial government, as is the college above it, and is sometimes called the Technical Middle School, but officially, the Academy of the Technical College. This institution gives a full four-year course, developed to be followed by a more advanced college course. The several departments are: (1) Chemical Industries, (2) Mechanical Engineering, (3) Dyeing and Weaving, (4) Mining and Metallurgy. All but No. 3 lead directly into the Technical College, but that one has no corresponding college course.

All the above Middle Schools are exclusively for boys. There is no Middle School opportunity for girls in Cheng Tu except in the Missions and in connection with the Normal

Schools. The largest of these is the one constituting a part of the First Provincial Girls' Normal School under the presidency of Mr. Liu. Students are put through the government curriculum in a modern up-to-date way. Handwork, manual training, domestic science, including cooking (both Chinese and foreign), and a generous allowance of physical education and hygiene find place here. The place is beautifully clean, neat and attractive. The girls are strong, wholesome, fine-looking young women. If they come with bound feet, they must have them unbound and started toward normal conditions at once. Nearly all the teachers here, at present, are men; but there is a matron or preceptress, and women teachers will be employed when they can be found. Many of the girls live in dormitories provided on the grounds.

Among the schools of Cheng Tu having "pet names" and standing for special ideals are two combination Normal and Middle Schools for girls. One is under government control; the other is a private institution. The former belongs to some minor political party, but receives state aid. The other is distinctly socialistic in its ideals and tendencies. It stands for equality of rich and poor, and of men and women. It is the only school reporting specifically the teaching of the phonetic script, but undoubtedly is not alone in this work.

Two other Middle Schools, both for girls, are provided by the Canadian and American Methodist Missions respectively. They are standard, modern, and are doing excellent work. The last to be mentioned is a Union Middle School for Boys, provided by the united efforts of the five Protestant Missions doing work in Cheng Tu. The school is provided with classrooms (Figs. 7, 8), dormitories (Fig. 9), and playgrounds in the spacious campus of the Union University. Its teachers are partly foreign and partly Christian Chinese. Its spirit and work are fine. It is in close proximity to the university and is intimately connected organically with the latter. It has a Chinese principal working under the president of the university, and the school could be called the Academy of the University.

The following is condensed from a paragraph on page 5 in the 1919 annual report of the West China Christian Educational Union. The Union had adopted in 1913 essentially the revised curriculum of the Chinese government. "In the Middle School the requirements have not been found satisfactory. Too many subjects treated in a scrappy fashion have made for superficiality and cram. In 1918 a radical revision of our curriculum was made. The first two years give a required course with few options. In the third and fourth

years three types of courses are provided, General, University Entrance and Vocational. Electives in these two years include Commerce, Religion, and Teachers' Training, etc. . . . It is interesting to note that the Model Middle School connected with the Provincial (Government) Higher Normal School in Cheng Tu has just adopted a course almost identical with that of the Union, and that the Board of Education in Peking has approved of it as an experimental course." This agrees somewhat with the description of the Middle School of Teachers' College given by the officials in charge and is probably a description of the same thing. They mentioned literature and arts in the general course and agriculture and industrial courses for vocational work and of course prepare directly for their own college entrance.

Normal Schools

Normal schools in China are of two kinds, Higher and Primary. The former prepare teachers for the Middle Schools and the latter for Primary Schools. China has six of the former for men and one for women. These are all national and are supported by the government. One of the Higher Normals for Men is in Cheng Tu and is called the Government Teachers' College. The others are distributed over the Republic, one each in Wu Chang, Canton, Nanking, Peking and Mukden. The Higher Normal School for Women is also in Peking. The one at Nanking is recently opened to women and this year enrolls about forty.

The one at Cheng Tu is primarily for three adjacent provinces, Sze Chuan, Yun Nan and Kwei Chow. Students gather from all three, and may come from any province. Mr. Yang, the principal, who visited American colleges and schools two years ago, says these Higher Normals are much like the Teachers' Colleges in our state universities and likened his particularly to the one in Iowa. Effort has been made to make these institutions attractive to the young men. Instruction is free, and even board is given in some. Subsistence was very generally furnished at the start, but it is hoped now soon to be able to withdraw this favor (Figs. 10, 11, 12).

Subjects taught are divided into two classes: the technical and subject-matter courses. In the former list are psychology, ethics, logic and education. Both the history of ethics and history of education are included. The principles of teaching and practice work form an integral part of the work. In the second list are: Chinese language and literature, English language and literature, mathematics, chemistry, biology, physics, geography, history and agriculture. A student is

FIG. 13. Government Normal School for Girls. Classrooms seen across a narrow court rich with vegetation.

FIG. 14. Entrance and buildings of Government Technical College. Pavements are stone blocks. Well-lighted recitation hall and shop.

FIG. 15. College of Chinese Classics. Bamboo lattice fence, stone lion in court. Buildings purely Chinese, brick and plaster with tile roof, all gray blue. Each building one room.

FIG. 16. Foreign Language College. Recently built, modern construction. Grounds beautifully kept. Dormitory above, classrooms below.

FIG. 17. Government Commercial College. A corner in the grounds. Offices in distance.

required to take all in the first list, but may elect at least two from the second list. Every senior obtains practice work in the Middle or Primary Schools under the same administration. Graduates go out as principals and as teachers in Middle Schools. This institution gives its work in three years following the one year of preparatory work required at the beginning. Commencement exercises are held; and certificates of graduation are issued, but no degrees are conferred.

The Primary Normal Schools are not national, but look to the province for their support. Several have been organized in Sze Chuan; Chung King, Tze Chou, and Cheng Tu are among the fortunate cities. In fact, Cheng Tu and Chung King each have two, one for men and one for women. Their function is to prepare teachers for the Primary Schools. In them essentially the same arrangements for tuition and subsistence are made as in the Higher Normals or Teachers' Colleges. The technical work in the Primary Normals is much the same as in the Higher, but the subject-matter courses are such as are taught in the grade schools. In both classes of Normal Schools, the teachers are men, for no native women in China are yet prepared to teach in such schools.

Since these Primary Normals receive as beginners Higher Primary graduates, they do not rank as colleges at all, but are doing work of Middle School grade. The First Provincial Normal School for Boys has practice work in both Lower and Higher Primary Schools which are managed for that purpose. The First Provincial Girls' Normal School has often been referred to as Mr. Liu's school (Fig. 13). It is probably as fine a native girls' school as there is in China. The atmosphere is fine. The ideals are high, and scholarship is kept up to as high standards as possible, considering the girls who come. The students usually come with only primary preparation. Such pursue their work here five years before graduation. Those who come with a full Middle School course finish here in one year. About 30% of the pupils come from Cheng Tu, and the rest gather in from all over the province. A dormitory is provided for all, but a nominal sum is charged for subsistence. These girls go out and actually organize primary schools all over the province. They are taught so as to have as much breadth of experience and vision as possible, and must be real centers of inspiration in every village and market town they reach.

Under Middle Schools were mentioned two girls' schools which are a combination of Normal and Middle Schools. One has an attendance of two hundred, and it prepares teachers to foster the influence of a political party or faction.

Neither seems to be attaining its ends as a Normal School or having much influence as a Middle School.

The Mission organizations have two Union Normal Schools, one for girls in the city, and one for boys in connection with the university outside. Both are well organized for their work. The former has a group of Chinese buildings somewhat adapted. The latter occupies a part of the university equipment. Some of the teachers are Chinese, some foreign. Both schools are doing fine work. The men's school stands for a higher grade of work but no higher standards of scholarship. Both maintain dormitories for the students. Both have practice schools. The men use the boys in the Dewey Practice Unit. The girls take practice work in the Primary Schools of the Canadian Mission. The curricula in both are partly technical and partly subject matter and are taught in three-year courses.

This equipment for the preparation of teachers is now being worked to a capacity of 650 men and over 200 women, less than 900 teachers in preparation. This number would not be enough to supply the schools of the city if half the youngsters were in school. There are now over 900 teachers in the city, and not one in fifteen of the children of school age is in school. The case seems more serious when one notes that there is no other teachers' training course in the whole vicinity. These few schools must equip teachers for the whole prefecture.

The Colleges and University

Under this heading will appear seven separate government colleges and the various colleges constituting the West China Union University. The Teachers' College has already been discussed among the Normal Schools, but it could just as well have been put here, because its work is of college grade and its entrance requirements are the same as those of the best colleges in other fields, four years of Middle School.

The other institutions doing full-grade collegiate work are the Technical College, the College of Chinese Classics and the Foreign Language College. The first is situated in the south-east quarter of the city, and occupies a group of small Chinese buildings (Fig. 14). It offers a three-year course along each of three different technical lines, and requires Middle School graduates other than those coming from its own Academy to spend at least one year in the preparatory work. It has been established a little over ten years and now has more than one hundred graduates. Chemical industries, mechanical engineering, and mining and metallurgy are the three lines along which the offerings are now grouped. For a few

years after its foundation the school offered a course in ceramics, but this was discontinued because of the expense of getting clays suitable for anything but crude, plain work.

In this technical institution the only fundamental science taught with laboratory work by the students is chemistry. The room is fitted up with individual desks, running water, gas and a good equipment of chemicals and glassware. Most of the stock was purchased over ten years ago, at the founding of the college just at the close of the Manchu Dynasty, when there were more money and foreign teachers in some departments. Recent purchases have been very small, just the most necessary articles as the supply becomes exhausted. Some chemicals bore the name of Merck; others were made in Shanghai, and still others in Japan.

In physics there is quite a stock of demonstration apparatus well kept, but no serious laboratory work by students is attempted. The mineralogy and geology likewise are without laboratories. In metallurgy, some assaying and other testing are done by students. In surveying, field work with instruments is done. Drawing and lettering are taught. English is the only foreign language.

Machine shops for working wood and iron are maintained. A ten-horsepower gas engine is used to furnish power for the shops. A gas generator stands beside it, which produces CO and H from coke and water to be used in the engine. Some machines in the shops were foreign made; others were made on the spot. All machines were small, and most of them were ten years old. A heavy, cast-iron base, 5 or 6 feet long, for a lathe, had just been made in the foundry. The work of casting and finishing was very well done. Among the machines were planes and lathes for wood and metal, drill press and band saw. Four or five forges with air blast made iron-working possible. In the molding and casting room was a good equipment. Models of wheels, frames and various machine parts were made in wood and the pieces cast in iron. Pig and scrap iron were used, but no ore. Melting was accomplished in a pot about 2 feet high and 15 inches across, made of iron lined with clay and heated over a flame of artificial gas and air blast. The pot sat on a tiny brick frame outside the building, and when hot was swung into the moulding room on a crane. Several apprentices were at work in the shops, moulding and forge rooms, even during a strike vacation. These serve as assistants when students come in.

The institution has quite a museum. Model machines of many kinds, chemicals, leathers and many other preparations

made by students were shown. There are small collections of ores, minerals and raw materials.

A technical office is maintained by the government in Cheng Tu, which is in no sense educational, yet is in the closest touch with the Technical College. Some of the teachers are in charge of departments in the office, and materials for study come from the office to the college. The office has four departments: (1) Chemical Industries, (2) General Chemical Analysis, (3) Dyes and (4) Mining and Minerals.

The College of Chinese Classics (Fig. 15) was organized about fourteen years ago, 1908, and is pretty well attended by mature students who come and go rather freely. There are very few about it at any one time, yet in a year a good showing is made in the enrollment. In this institution the Chinese classics, history and philosophy are taught from the Chinese-Confucian point of view. It is said to be a sort of Confucian school, but is not one of the old type. It has been, so far, impossible to find just what the difference is between it and the old type, for men familiar with its workings say it does not employ new, Western methods, but the students study and the teachers teach in the old, time-honored way. Some have found in its methods a touch of the new. It seems that a dozen years ago, when the new education was getting started, a few teachers and devotees of the old classical education feared that the old would be destroyed or at least neglected if something were not done, so organized this school either as a mild protest or a compromise. Its persistence and its imminent downfall are both forecast. It is located almost at the corner of the Union University grounds outside the city walls and in a quiet, shady, attractive compound.

The third of these better professional schools is known as the Foreign Language College (Fig. 16). It is located in the northwestern part of the city in what is called the Manchu City, but outside the Imperial City. A full four-year course is offered beyond the Middle School; and, as stated above, there is a Middle School carried on with the college, which cares for any who come not fully prepared. Its work compares well with the arts college in America except in the full absence of science. This might set it closer to what is sometimes called the classical course in an arts college. Greek, Latin, English, French and Chinese languages and literatures are taught, together with the history of literature, philology, mythology, philosophy, logic, sociology, general history and histories of certain nations. A fine modern building for dormitories has been erected. Classes meet in Chinese one-story houses. The

work seems to be of good quality. Most of the teachers are Chinese, but some foreign help is employed.

Beside these three better schools there are three schools doing a grade of work not quite so fully collegiate. Their preparatory schools take a relatively larger place and are not as sharply differentiated from the higher work. The first in point of numbers is the Law College, located in the western part of the city. Its mission is to teach Chinese law. This is a strange body of material. In China there is not much law beyond custom and the will, judgment and prejudice of the court. So, in a way, the Law College is in a peculiar position. In its curriculum are several courses designed to broaden the vision and powers of the student beside the courses in law and history. Many students feel that the law gives a man the best opportunity nowadays in public life. This school keeps more aloof from its sister institutions than any other.

Another of these three schools is the Commercial College (Figs. 17, 18). Its name suggests its emphasis. A considerable portion of its work seems to be not of real collegiate grade.

The third is the College of Agriculture, outside the city toward the southeast, along the south bank of the Min River, and perhaps one and one-half miles from the east gate. Here a tract of land embracing a hundred acres or more is devoted to planting, cultivating, experimental horticulture and agriculture (Figs. 19, 20). Very little attention is given to animal husbandry, breeding, soils and farm mechanics. The little buildings are neatly kept, and the gardens and flower plots, the nursery rows and mulberries are very nicely planted and cared for. Boys are here given much that will be of value to them, but one wonders why not more. So much could be done for Chinese agriculture, in horticulture and forestry and in other lines that are untouched at present that one dislikes to pass the College of Agriculture with so little said. It has much possible growth and usefulness ahead.

These seven institutions make up the group of government colleges. Their funds come from the government treasury; but in spite of a rather generous policy in spirit, the funds have been greatly lacking recently because the soldiery is getting so much of the public money. Schools have to subsist on 20 to 60% of their accustomed allowance this winter, and the circumstances promise nothing better. This may be partly explained by the fact that, although the colleges are called government or national schools, their funds really are designated out of the provincial tax receipts raised for national purposes. The government really never handles the

funds for such schools in the provinces. Hence, if the soldiery gets the first grab at the provincial treasury, there is little left for schools. This shows why government education succeeds so differently in different provinces. While schools in Cheng Tu, Sze Chuan, are forced to close down, Nanking in Kiang Su has flourishing institutions of the same class.

Some of the friends of education, both Chinese and foreign, are looking forward to the time when these seven institutions plus a first-class medical college and possibly one or two others shall be federated or combined into a real, thorough, efficient university, comfortably housed in a fine suite of buildings in the Imperial City. Considerable portions of this "city" are in ruin and disuse at present. Military horse stables occupy a part. Probably the College of Agriculture and the Technical College should not move into this area, but perhaps the other five could develop there. Such an amalgamation of all the higher education supported by the government in the city would dignify the whole effort, unify and standardize, as well as correlate, the work, and economize on teachers and buildings. The dormitories would probably have to be outside the Imperial compound. It may be of interest to know that the site of the Teachers' College is about the same in this court as that of the old examination booths where thousands of men strained every mental thread to meet the rigid tests put to them.

The West China Union University

This institution is the only university in all West China, an area estimated at over 300,000 square miles, with a population of nearly 100,000,000 people. It is the crowning piece in the purely Christian educational system of West China. The constituency cannot be worked out from the appended tables, because they cover only Cheng Tu. The following figures are taken from the 1919 report of the West China Christian Educational Union.

Lower Primaries	275	students	12,298
Higher "	53	"	1,512
Middle Schools	9	"	523
	337		14,333

These contributing schools are scattered over three or four provinces and maintained by a dozen missionary organizations. One must not infer that students from other schools cannot come to the university. Government and private schools may send their graduates here under the same conditions as do the Mission Schools.

The university buildings occupy a tract of about 120 acres lying near the south wall, but outside the city. The buildings are grouped and distributed over the grounds to give the appearance of spaciousness so much appreciated here both by Chinese and foreign visitors and residents. The buildings are substantial and attractive (Figs. 21, 22, 23). Residences for faculty and administration fringe the campus lots.

The faculties now number about fifty teachers, seven of whom are Chinese. The administration, control and support come primarily through a Board of Governors selected from members of the five co-operating missionary societies at home. The societies are the American Baptist Foreign Mission Society, Church Missionary Society, Friends' Foreign Mission Association, and the boards of the Canadian Methodist Mission and the American Methodist Foreign Mission. There is a senate or local board which includes many of the faculty, members and representatives of the missions interested.

The institution began with two faculties, Arts and Science, in 1910, and has made much growth since, both in scope and students and in influence on the community. It now comprises six colleges—the two above, together with Religion, Education, Medicine and Dentistry. Its instruction is further divided horizontally into Junior and Senior divisions of three years each. In the former, the courses are general and tend to even up the preparation of the pupils. Students coming with adequate preparation tested by examinations may omit the first year. In the latter, the courses are specialized in all six faculties or colleges, and make splendid provision for the individual needs of the men.

Of course, it is still in its infancy, even with all this growth and usefulness at the end of ten years, but it is a child of rich promise, and must continue to exert an increasingly important influence on matters educational, social and religious in West China. It is the only institution in its territory granting degrees.

Summary and Conclusions

The statistics bring out very clearly a few facts which should be stated in words to be appreciated. They will appear here. First, a comparison of the numbers of pupils reached by the Mission Schools and the native schools shows:

	Boys	Girls	Total
Mission Schools	1268	656	1924
Native "	6775	1845	8620
Totals	8043	2501	10,544

Of all the girls in school in Cheng Tu, about one-third are in Mission Schools and two-thirds in native schools. Less than one-fourth of the total attendance is girls. About 18% of all people in school in the city are in Mission Schools. It is rather striking what a large proportion of the education is Christian. Of course, it means a large proportion of China's educated (more or less) people will have had Christian training. The comparison of those in colleges shows at present only about 6% in Christian colleges. Christian collegiate education is just begun in Cheng Tu.

The number reported in colleges is 1,460, a number already shown to be too large for those doing collegiate work. Even if it be reduced to 1,000 and the loss added to the Middle and Normal School totals, we have 3,711 in Middle and Normal Schools against 1,000 in college. The comparison is not fair, because a larger proportion of the college than of the Middle School students come from out of the city. I think, however, that, when all is said, a larger proportion of students who go through Middle School go to college than in America. This cannot be proven, because statistics to show the sources of the students are not available.

One might think too that nearly every one in the Lower and Higher Primary goes on to Middle School if he did not note the same relation between these schools. If one-half of the Lower and Higher Primary numbers be compared with the Middle and Normal School numbers, it looks as if more per year attended the higher schools. This appears in the figures because so many come into the Middle and Normal Schools from outside the city. Here the discussion of the various schools throws some light on the question, although statistics are wanting.

The disparity between the provision made for and used by the women and that for the men is very marked in the upper grades. Something like one thousand men of college grade, but not one woman, appear in the count; and no place for her to go if she desired to take more advanced work. In Nanking the native Teachers' College is co-educational, and in Canton and Shanghai the mission colleges are co-educational. In Peking a Higher Normal is provided for women. In Cheng Tu plans are developing for a women's college in the Christian offerings. The question might well be raised now, Why not open the doors of the colleges of the West China Union University to women on equal terms? If it cannot be done today, it can be before the women's college is well on its feet; and the organizers would do well to bear this in mind in making their plans.

FIG. 18. Same. Main brick building in center. "Bitou" recitation halls. Reception Hall to the right. Lanterns in the court.

FIG. 19. Government College of Agriculture. Plots of plants and trees in experimental grounds.

FIG. 20. Same. Long, low buildings beyond paths, irrigation ditch and experimental plots.

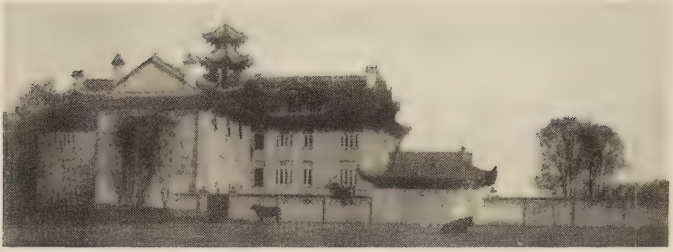

FIG. 21. Van Deman Hall, West China Union University. Blue-gray brick; tile roof with Chinese upturned corners. Looks very "foreign" in its present setting, but would look very "Chinese" in an American college group.

FIG. 22. Administration building from S. E. Looking across Chinese gardens, bamboo lattice fences and the road. All woodwork of building is highly colored with red, blue, green, black and white.

FIG. 23. Hart Hall from Van Deman, showing spacious grounds and roads. Irrigation ditches follow all roads. Lumber piled to the right is for new buildings to go up in the spring.

In the Middle and Normal Schools, the men count four-fifths of the enrollment, and in the Primaries, about five-sevenths are boys; but in the kindergarten, the girls are easily ahead, an earnest or a premonition of the turn the tables may make in a dozen or fifteen years. It should be noted too that in the mission primary schools the girls and boys are much more nearly equally provided for. See summary tables below.

Grade of Schools	*Mission*		*Native*	
	Men & Boys	Girls	Men & Boys	Girls
College	90	...	1370	....
Middle School and Normal[2]	315	93	2301	542
Higher and Lower Primary[2]	836	536	3104	1205
Kindergarten	27	27	....	98
Totals	1268	656	6775	1845

	Men & Boys	*Girls*	*Totals*
College	1460	....	1460
Middle School and Normal	2616	635	3251
Higher and Lower Primary	3940	1741	5681
Kindergarten	27	125	152
Totals	8043	2501	10,544

But the most telling disclosures appear when these generous figures are put over against the needs of the city. Any one looking at these figures would be much gratified to learn that more than 10,000 young people are using the educational facilities and that among these are 2500 women and girls. What a power these young people can be in the next generation! Estimates of the population of Cheng Tu run from 600,000 to 1,000,000. For safety, assume the lower figure. According to the American census figures, essentially one-sixth of the population are between the ages of 6 and 14. Applied to Cheng Tu, there are 100,000 children between these ages. A similar estimate would give some 45,000 of high school age and 40,000 of college age. Now stand these figures over against the numbers actually in the schools.

	Men	Women
Of College Age	20,000	20,000
In "	1,460	.....
Of High School Age	22,500	22,500
In " "	2,616	635
Of Lower and High Primary Age	50,000	50,000
In " " " "	3,940	1,740

The comparison is the more telling when it is realized that great numbers of the men in college are not Cheng Tu men at

[2]These figures depart a little from those given in the recent report (1921) of Dr. I. B. Lewis, W. F. M. S. of M. E. Church. Her figures are sometimes larger, sometimes smaller. Totals essentially the same.

all, and also a large number of students of Middle and Normal Schools are from outside; and that many are older than 14 years. Then look at the women and girls' side of the table. Not one boy in twelve is in the Primary Schools, and only about one girl in thirty is attending. Where are the others? In the High Schools, a little more than one boy in nine is using the privilege of his school, and not one girl in thirty-five is in her place. In college, no girl at all and only one man in twenty are in the school. Yet the schools are mostly comfortably filled. Provision is very inadequate.

There are more than 1000 teachers in Cheng Tu in charge of these 10,000 pupils. In the various Normal Schools, Teachers' Colleges and in the two Middle Schools preparatory to the Normal Schools are found 325 girls and about 650 men. Perhaps 900 new teachers can be turned out every three years (the time required for the full course in the various schools preparing teachers). But as in America, some who prepare to teach never begin; many who begin serve only one or two years; and a considerable number enter the profession without going through the teachers' preparing school. The net results of all these variables cannot be known, but it seems probable that the training schools for teachers can but little more than keep pace with the needs of the present enrollment of pupils. This is certainly true if allowance be made for the scores and scores who when prepared go to teach outside Cheng Tu. There is no other place preparing teachers nearer than Chung King. How then are the schools to be built up? What would happen if Sze Chuan should enact a compulsory education law for every child from 6 to 14 years of age, and proceed to enforce it? If every person in a Middle or Normal School or in a college, no matter what sort of school it be, in the whole city of Cheng Tu should enter the teaching profession as fast as he graduates and if none should drop out of the profession, ten years would not provide more teachers than would be needed in Cheng Tu for those primary schools. There would be not one left for schools outside the city, nor one to enter higher education either as a teacher or pupil, not one to enter any other profession.

These deductions show in a general way how serious is the problem of education in such a country. An adequate system cannot be provided at once, nor in ten years, nor in twice that, even if there were the will to do it. Further, if the educational system should be multiplied by ten, a minimum to provide for the teaching of all from 6 to 14, the financial system of the province would be absolutely swamped. The housing and text-book problems are also serious ones. The

logical conclusion is that universal education in China must be a matter of growth, to be attained only after many years of careful, continuous nurture. Cheng Tu is not behind the ordinary city, but it is far ahead of the *hsien* and market town and village.

Since democracy cannot succeed with an illiterate people, it is just as logical to conclude that democracy in China must come slowly; that several decades will probably not see real popular government in operation in China.

STATISTICAL TABLES

Mission Schools[3], Kindergarten to University

Organization	Grade of Schools	No. of Sch'ls	Boys	Girls	Total
Canadian Methodist	Lower Primary	3	181	...	..
" "	" "	2	...	174	..
" "	Higher "	1	50	...	..
" "	" "	1	...	45	..
" "	Kindergarten	1	7	7	14
" "	Middle School	1	...	31	..
American Methodist	Lower Primary	2	77	...	..
" "	" "	6	...	143	..
" "	Higher "	1	36	...	..
" "	" "	1	...	30	..
" "	Kindergarten	1	20	20	40
" "	Middle School	1	...	32	..
American Baptist	Lower Primary	1	97	...	..
" "	" "	1	...	83	..
" "	Higher "	1	40	...	..
" "	" "	1	...	35	..
Friends	Lower "	1	42	...	..
"	Higher "	1	63	...	..
Cath. Mission[4]	Lower "	1	175	...	..
" "	" "	1	...	26	..
Union Schools	" "				
" "	(Dewey Practice Unit)	1	75	...	..
" "	Middle School	1	135[5]	...	..
" "	Normal "	1	...	30	..
" "	" "	1	80	...	..
" "	Bible School at W. C. U. U.	1	45	...	..
" "	University	1	90	...	..

[3]Data from West China Christian Educ. Union through Dr. Ida B. Lewis, American Methodist Women's Board.

[4]Data from French Consul Bodard through Dr. Ida B. Lewis.

[5]Another source gives 200.

NATIVE SCHOOLS[6]

School; Its Title or Name and Grade	No. of M'g'rs	No. of T'ch'rs	Pupils Boys or Men	Girls W'm'n
Government Schools and Colleges:				
Chengtu Teachers' College Normal School	10	38	378	...
Middle School	2	20	169	...
Lower and Higher Primary	6	9	161	...
Law College	12	24	472 [7]	...
Chinese Classics College	6	12	86	...
Foreign Language College	7	19	116 [7]	...
Agricultural College	8	30	175 [7]	...
Commercial College	7	20	53 [7]	...
Technical or Artisan College	9	40	90	...
Provincial Technical Middle School	6	30	104	...
Provincial Schools:				
First Provincial Normal School	10	16	194	...
Lower and Higher Primary of above	8	23	213	...
First Provincial Girls' Normal School	12	30	...	166
Middle School of same	..	..	...	116
Lower Primary for Practice Work	..	..	...	66
" " not for Practice Work	..	..	...	415
Higher " " " " "	..	..	...	122
Kindergarten	..	..	...	98
First District Middle School	10	31	495	...
Lower and Higher Primary Schools.				
Middle City	12	30	685	...
Southern "	15	52	578	...
Western "	5	39	502	...
Northern "	5	39	293	...
Cheng Tu Municipal School[8]	8	20	142	...
" Union Middle School (16 *hsiens*)	9	32	402	...
" Hsien " "	5	25	145	...
Hwa Yang " " "	5	27	141	...
Sui Fu Middle School	3	15	169	...
Tze Chou " "	4	17	171	...
Ch'u Tsai " "	6	19	126	...
Lo Ch'un " "	4	8	21	...
Che Kiang Guild Middle School	5	8	22	...
Cheng Tu Hsien Lower and Higher Primary	5	24	173	...
Hwa Yang " " " " "	3	17	125	...
Cheng Tu "[10] " " " "	..	..	...	100
Hwa Yang "[10] " " " "	..	..	...	100
Miscellaneous Schools:[9]				
Shao Cheng Lower and Higher Primary	3	12	130	...
" " Union Lower and Higher Primary	3	10	151	...
Yung " Girls' " " " "	6	16	...	102
Youths' "Strengthen the Country" L. and H. P.	5	28	93	...
I Chow Gov't Normal and Middle School[10]	..	..	...	200
Chao Ch'un Private Normal and Middle School[10]	..	..	...	60
Yang Shih Kai Gov't L. and H. Primary	..	..	...	300

[6]Data furnished by Mr. Feng, City Comm. of Ed., through Dr. Ida B. Lewis. [7]These four college lists probably each contain names of men not of college grade. [8]Teaching City Gov't. [9]Schools with "pet" names. [10]Data by Mr. Liu through Dr. Ida B. Lewis.

THE PSYCHOLOGY OF SOLVING PUZZLE PROBLEMS

By Joyce E. Mather and Linus W. Kline

I. Introduction

The subject matter of the present report is a part of an experimental study of reasoning for which problems of a mechanical puzzle type were used for material.

The use of puzzles, other than the maze type, as a means for studying reasoning has been surprisingly small. Doctor Lindley (5) in 1897 appears to have made the first considerable use of several types of puzzles in his genetic study of puzzle interests. He found that puzzle interests, i. e., kinds of problems, among people change with age, that the change is from simpler to more complex forms of puzzles, and that riddles, rebuses and simple charades give way to conundrums, enigmas, word squares, hidden words and mechanical constructions. Ruger (6, p. 21-33) in his study of the "Psychology of Efficiency" used tridimensional puzzles, so called, made of wire. The solution of these problems involved removing some part from the rest, and as a consequence required manipulation and overt movements readily observable. Tait's Labyrinth Puzzle used by Lindley (5) requires overt movements and is of course readily observable. He chose it because: (1) it is sufficiently difficult of solution to require a number of trials, (2) the instructions of procedure are easy to follow, (3) a false beginning is soon apparent to most subjects, as there are only two correct ways for beginning.

The results from solving Tait's puzzle show a large majority made a haphazard beginning at first and further that wide individual differences existed in the conception of the figure, often undergoing radical changes in successive trials. Solving tridimensional puzzles emphasized the same thing and in addition showed the application of a principle to a concrete situation. Ruger (6, p. 21-39) observes that a distinctive characteristic of human learning, as opposed to animal, consists in understanding principles and in consequent learning by a minimum of successful experience.

II. Present Problem Stated

The matter of seizing and applying a principle to the solution of a concrete situation, so important in human welfare,

suggested the present problem. By a principle, here, is meant any agent or means, used repeatedly under more or less similar situations, producing similar results. The primary object of the present study was to observe the ways in which such principles are likely to be discovered and applied in solving problems. It appeared that what was needed for such a study was a series of related problems of increasing difficulty furnishing conditions susceptible of control.

III. Material

The problems for solution consisted of six cardboard puzzles, cut from cardboard 8½″ square. The puzzles formed a related series beginning with a simple one having four pieces, and ending with a sixth of fourteen pieces. See Fig. 1.

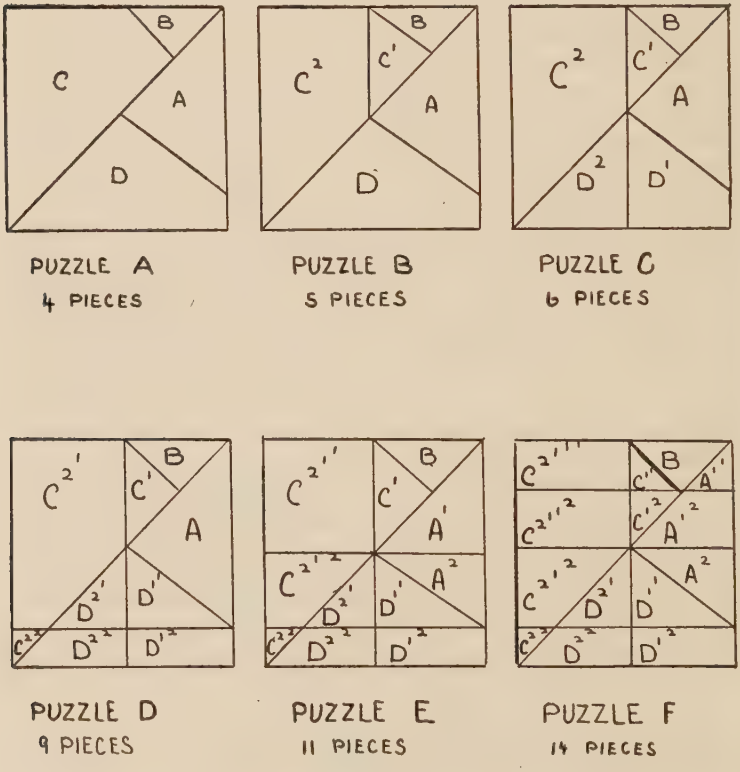

FIG. I

A study of Fig. 1 shows that each succeeding puzzle after the first was more complex than the preceding, out of which it was built, as it were. The puzzles are indicated by the letters A, B, C, D, E, F respectively. The first two are described in some detail.

Puzzle A—Puzzle A is the simplest and has four pieces. First, a diagonal is drawn from the upper right hand corner to the lower left. A point is placed at $2\frac{1}{2}''$ from the top and one at $6''$. Then a perpendicular is drawn from these two points, upwards from the $2\frac{1}{2}''$ point and downwards from the $6''$ point. Each piece of the cardboard puzzles is marked on the back by the number of the puzzle to which it belongs. The subjects of course did not see the back of the puzzle. On the front each piece is numbered, but not consecutively, nor is each number facing the same way. The subject must gather no clue from these numbers to aid her in solving the puzzle. A paper copy is numbered and lettered in the same manner.

Puzzle B, Six Pieces—This is drawn exactly like puzzle A, but it has an additional line through C joining the point where the $2\frac{1}{2}''$ perpendicular line crosses the upper border, to the $6''$ point on the diagonal. This is also numbered inconsistently, and lettered as in the preceding puzzle when no change has been made. From the figure it may be seen that piece C has been cut through, and the parts are numbered C^1 and C^2 from right to left.

Since C, D, E and F are constructed and lettered in exactly a similar manner, further description is unnecessary. It will be apparent from the above that the subjects could be guided alone in solving any puzzle by the shape and size of its pieces. The subjects saw the puzzle pieces only while using them. At all other times they were kept in a closed envelope. The symbols of identification made possible a written record of each move in solving the puzzles.

IV. Procedure

Four subjects worked two periods a week, thirty minutes each. The puzzles were presented, one at a time, and solved by the subjects working apart. The pieces of a puzzle were placed on the table and moved about by the subject until the original square was formed. The time, measured by a stop watch, was kept from the beginning of active study of the puzzle until its solution; a record of the number and kind of moves given each piece was kept, e. g., if piece 1 is placed next to piece 3, it is shown in the record thus 1|3, the line between showing the relative positions; or if piece 4 is placed above piece 2, it is shown by the digits written thus $\frac{4}{2}$; a record was

also kept of introspections and comments made by the subjects.

A. Two subjects, M. P. and D. D., worked by what may be termed the "whole method." The procedure was as follows:

As soon as puzzle A was completed once, which formed a trial, the subject proceeded to solve puzzle B and the puzzle C, and so on until puzzle F had been finished. This constituted trial one. The subject then began the second trial, starting with puzzle A, then B, then C, etc., until F is finished a second time.

This procedure was continued until the experimenter was sure that the subject had mastered the puzzle, i. e., when excess moves disappeared in the final trial and the time limit of the subject appeared to have been reached. The subject was then required to draw puzzle A from memory. If the drawing was correct, she drew B on another sheet, the first drawing being removed. If the drawing of A was a failure, the subject solved that puzzle again, and then redrew it. This procedure was continued until every puzzle was drawn correctly. If a mistake was made on any puzzle it was solved over again and redrawn. The ability to draw each puzzle in succession correctly was taken as a proof that the entire problem had been mastered. This method of requiring a drawing was adopted as soon as it was found that solving the puzzle might have been purely an accident; for if the pieces were disarranged by the experimenter, the subject was sometimes unable to solve the problem again within a reasonable time.

B. The second pair of subjects worked by the so-called "part method." In this case, each puzzle was fully learned before proceeding with the next. Puzzle A, for instance, was learned by making a series of repeated trials without interruption. After it was done correctly it was repeated until the minimum time and minimum number of false moves had been reached, the necessary number of moves being determined by the number of pieces in the puzzle. This was continued until all the puzzles had been learned. The subject then drew the whole series of puzzles in the manner explained under the whole method of learning.

The rate and accuracy in solving the problems were thus registered in four ways: (1) by the number of moves, (2) by the amount of time, (3) by general observations on the part of the observer, and (4) by the subjects' reports.

V. Results

The results are given in two parts: (1) The first part embodies a general account of how the problems were solved.

This account is obtained (a) from the records of the movements made while solving the puzzles, (b) from the subjects' reports, and (c) from the final drawings of the puzzles. (2) The second part compares the relative success of the subjects using the "whole method" with that of subjects using the "part."

1. At first the trial and success method prevailed, lasting longer with some subjects than with others. It would persist until the positions of some of the pieces used in preceding puzzles were recognized, or until a general understanding of the composition of the puzzle was obtained. Thus it was observed that certain pieces were put together that were recognized and were used as a means of finding the position of other pieces. The first recognized piece in the simpler puzzle was the largest piece. When the puzzles became more complicated, beginning with puzzle D, it was the tiny corner triangle B and its neighbor which were almost invariably fitted together first. If a large piece was recognized before its duplicate in succeeding puzzles had been sectioned, the probability of recognizing the component pieces as the large piece was greatly increased. The recognition and use of the diagonal line (cut) or other through lines (cuts) increased purposeful use of pieces and encouraged a search for base lines on which the square could be reconstructed.

As to the general understanding of the plan on which the puzzles were made, i. e., that each puzzle was formed from the preceding one, the subjects varied considerably in the time required to comprehend that fact, as appears in the individual records given further on.

For the most part the subjects followed the same general plan, beginning at the left hand side with the largest piece and building towards the upper right hand corner. When the small triangle C^{22} appeared in puzzle D, some used it as the key piece and formed the puzzles from it; others recognized it at once, and fitting it to its neighbors, D^{22} and D^{12}, formed a rectangle, which they put to one side until the puzzle was completed, then placed it along the bottom of the square. Should the manner of solving a preceding puzzle be seen to apply to a subsequent one, it was apt to get attention and to become somewhat elaborated as the solving progressed. Building by rectangles is an example. Puzzle D (see Fig. 1) gave the cue to look for rectangles in puzzle E, while the construction of this puzzle reinforced the plan and idea to be applied to puzzle F, composed of four such rectangles. Or again the through vertical cut in puzzle C became the major principle on which the subsequent puzzles were done.

Fig. 2 shows that piece B was the only one in the set that did

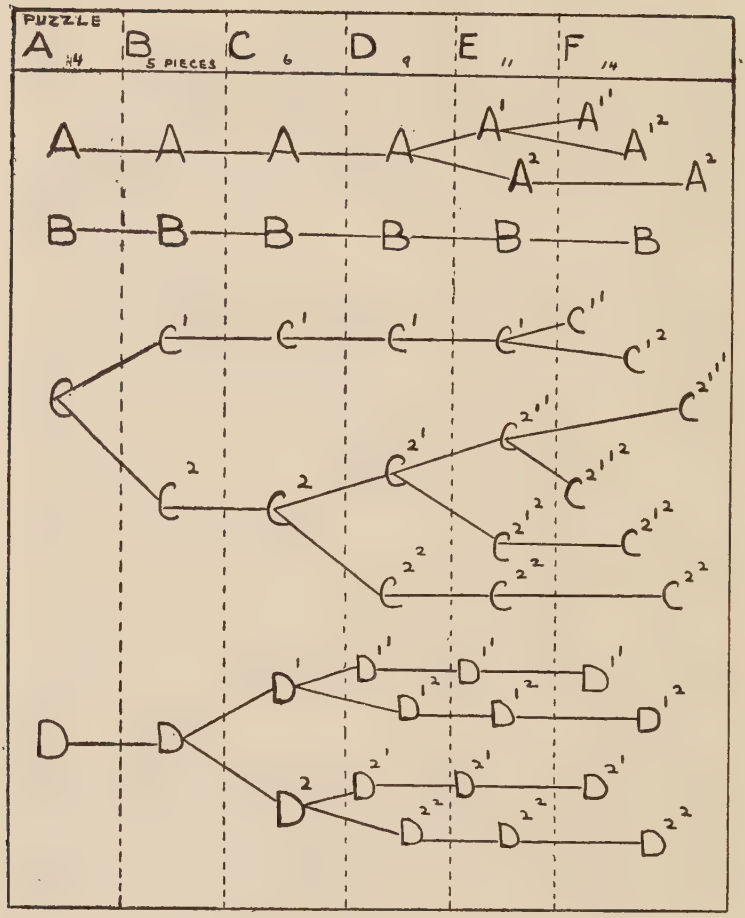

FIG. 2

not undergo change, retaining its shape throughout. But, contrary to expectation, it was in most cases the last piece to be put in place. This was probably due to two facts: (1) that the general tendency was to solve the puzzle by beginning at the lower left, and as the B piece was the last piece in the right hand corner, it remained unfitted until the end; (2) its triangular shape led to its confusion with several other pieces similar in shape.

A partial report of the methods and plans of each individual follows:

The results of two of the subjects, D. D. using the "whole method" and R. B. using the "part method," are shown in Tables I and II respectively. They show the name of the puzzle, number of the trial, manner of response, number of moves and the time for solving each puzzle. Symbols for pieces of puzzles are shown in brackets, thus, (C^2).

The rate at which the puzzles were learned is shown in some measure by the diminution in time required to solve them at subsequent trials, and the accuracy is partly shown by the number of moves. Thus in Table I it is seen that puzzle A was solved at the first trial in 8 moves and in 2 minutes, 34 seconds, and at the second trial 4 moves and 1 minute and 2 seconds of time.

The diagonal "cut" was the first feature to attract D. D.'s attention, and in the majority of cases she formed the puzzle pieces *along the diagonal*, rather than by fitting them to each other. The subject never reported, nor did it appear that she realized, that each puzzle was built from the preceding one. She attacked each one more as an independent puzzle, remembering only the times she had made that particular one, rather than using the experience gained by making all the others. That for her the puzzles did not constitute a related series further appears from her manner of drawing them. The lines which ran completely through the puzzles were noticed and remarked upon, while the two original shorter lines in puzzle A were unnoticed and as a consequence gave trouble. In reproducing the puzzles, she drew the diagonal, then the vertical and then the horizontals, followed by the two short original lines in A. The horizontal lines created confusion in drawing D, E and F, e. g., in drawing D the extra horizontal line in E was substituted for the two original short lines. D. D. omitted these same short lines in her drawing of puzzle F. The manner in which this subject both solved and drew the puzzles showed that they were conceived, solved and remembered as separate and distinct problems.

M. P., also using the "whole method," soon used the features of previous puzzles to solve those following, the major diagonal being the first distinctive feature to be recognized and used. By the third trial she explained how the extra lines cut up the pieces of preceding puzzles.

Both D. D. and M. P. solved A in haphazard fashion, but the latter in the first trial with B hit upon the plan of beginning with the largest piece, C^2 on the left, then placing in turn pieces D, A, C^1 and B, i. e., building towards the upper right

hand corner. These two principles: (1) using the largest piece in proper position as an orienting function, (2) building from lower left to upper right along the diagonal as a means of control, gave M. P. immediate mastery of the first three puzzles. The problem changes in puzzle D, owing to the horizontal line (cut) forming three small pieces along the base. After M. P. had used these pieces in an erratic fashion at first, she grasped the significance of this principle, and the remainder of the puzzles were more quickly solved.

M. P.'s manner of drawing the puzzles showed that they had been grasped as a related series, for each puzzle was drawn as that preceding and completed by adding the *extra line*. A and C were each drawn incorrectly at the first trial, due to confusing a minor short line with a somewhat similar one in a later puzzle.

M. P. required 320 moves and devoted 1 hour, 28 minutes and 46 seconds to master the six problems as contrasted with D. D.'s 307 moves, 1 hour, 18 minutes and 20 seconds in the same work. The advantage of the latter subject was won despite the fact that she did not appear to conceive the problems as related and to profit by solving preceding ones, but applied to each case a common principle. D. D.'s excess moves in the final trials were 12, and M. P.'s were 8. The tabulated results of M. P. do not appear in this paper as they were somewhat similar to D. D's.

TABLE I. WHOLE METHOD

Subject—D. D.

Puzzle	*No. of Trials*	*Subject's Response*	*No. of Moves*	*Time Min.*	*Sec.*
A	1	Haphazard trials till complete	8	2	34
B	1	Begins with largest (C^2) and ends in upper R. corner	5		51
C	1	Same plan—begins with larger piece and ends in upper R. corner	9	2	37
D	1	Same plan, adds 3 new pieces at base	20	8	17
E	1	Same plan, adds 3 new pieces at base	47	16	11
F	1	Same plan, adds 3 new pieces at base	31	14	12
A	2d trial	No definite plan	4	1	2
B	2	No definite plan, places A's point to center	5		43
C	2	Begins (C^2)	9	1	20
D	2	Same as B, second trial	9	1	14
E	2	No definite plan, adds 3 new at finish	19	6	14
F	2	Forms rectangles, adds 3 new at finish	23	6	21
A	3d trial	Makes the diagonal by CB	6		48
B	3	Same as B, 1st trial; forms diagonal	5		20
C	3	Same as C, 1st trial; forms diagonal	7		53
D	3	Same as D, 1st trial; forms diagonal	11		47

Puzzle	No. of Trials	Subject's Response	No. of Moves	Time Min.	Sec.
E	3	Same as E, 1st trial; forms diagonal	17	4	31
F	3	Same as F, 1st trial; forms diagonal	17	2	21
A	4th trial	Same as B, 1st trial	3		13
B	4	Same as B, 1st trial	4		12
C	4	No definite plan at first, then forms diagonal	9	1	7
D	4	Same as D before	9		49
E	4	Same as E before	14	1	48
F	4	Same as F before	16	2	55
24 (Total)			307	1 hr. 18	20

This table is to be read as follows:

While making puzzle A during the first trial, the subject responded by making haphazard trials until the puzzle was complete. The number of moves was 8 and the time 2 minutes and 34 seconds. Subject begins puzzle B with the largest piece C and ends in upper right hand corner, etc.

TABLE II. PART METHOD OF PROBLEM SOLVING

Subject—R. B.

Puzzle	No. of Trials	Subject's Response	No. of Moves	Time Min.	Sec.
A	1st trial	Tried each piece	29	9	19
A	2d trial	Picked up C, placed B, next made ½ square	5	1	13
A	3d trial	Same as second trial	3		18
B	1	Many attempts	24	7	15
B	2	Same as A's second trial	4		25
C	1	Same as A's second trial	33	12	14
C	2	Placed D in lower L., built from it	5		55
D	1	Fitted C^{22} to C^{21} and built along diagonal	13	4	50
D	2	Same as 1st trial	8		54
E	1	Same as D, 1st trial	14	4	45
E	2	Same as D, 1st trial	*11	1	01
F	1	Same as D, 1st trial	21	2	23
F	2	Same as D, 1st trial	*14	1	06
13 (Total)			156	46	38

Read as Table I.

R. B., using the "part method," understood the basis upon which the puzzles had been built as soon as three, A, B, C, had been completed. At first one-half of the puzzle on the left of the diagonal was formed; then the right half was made to complete the whole. Piece C^{22} became the basis for building puzzles D, E and F. R. B. saw and often referred to the four original pieces of puzzle A. It should be observed that the total number of moves was 156 and the time 36 minutes and 48 seconds and the total number of trials 13.

*The comparatively large number of moves in the second trial of E and F respectively was due to the greater number of pieces belonging to these puzzles.

Subject E. D. applied the knowledge gained in solving the simpler puzzles to the complex ones. She, too, saw that each puzzle depended in construction upon the preceding one. Her tendency was to begin on the left with the largest piece and end in the upper right corner with piece B. The significance of C^{22} was not seen at the first trial with puzzle D, but became evident in the second and was at once used as the starting point for forming the rectangular base. It was similarly used in puzzles E and F, and became the cue for finding their superimposed rectangles. E. D. completed the entire six problems in 137 moves and in 29 minutes and 46 seconds. This was the best record of the group. The table containing her results is not given in this paper.

It was quite evident, even before the subjects reproduced the puzzles in drawing, that the "part method" was far superior to the "whole."

2. This decided difference in the comparative worth of the two methods calls for further analysis and comparison of results, and particularly since earlier investigations showed a strong superiority of the whole over the part method of learning. These early investigations by Lottie Steffins quoted by Colvin (2) and much later by Pyle and Snyder (8, p. 343), were concerned with methods for learning prose and poetry, involving strictly language habits. But whenever problems are set in which motor habits, so called, rather than language are involved, as in Pechstein's (8, p. 344) work, the results reverse the earlier findings, showing a superiority of the part method. In a recent article entitled "Smaller vs. Larger Units in Learning the Maze," J. W. Barton (1) shows that there is ample evidence to justify the doubt that has been raised concerning the validity of the statement that to "learn by wholes rather than by parts is more efficient." Hunter claims that "as yet insufficient experimentation has been done to warrant the extension of the law to other than language habits."

While the six problems used in the present investigation required movements in their solutions, they are more easily classed with "reasoning material." The conditions did not force rhythmic, precise and constant movements, but called for sharp spatial discrimination, a search for cues and for repetition of significant features, perception of a general feature, of the connection of the several parts and their places in the solution of the whole. Tables III, IV and V express in numerical terms the superiority of the part over the whole method.

Table III is made by combining (not averaging) the numeri-

cal results of the two subjects using the whole method. Table IV is similarly constructed from results of the part method.

In the column headed "Total Trials" is shown the number necessary for the completion of each puzzle before it was solved. The time per trial, however, shows wide variations, the longest being required for the more complex puzzles.

TABLE III. RESULTS OF WHOLE METHOD OF LEARNING

(Combined Results of Subjects M. P. and D. D.)

Puzzle	*Total Trials*	*Total Time*		*Total Moves*	*Excess Moves in Final Trial*
		Min.	*Sec.*		
A	8	8	31	37	0
B	8	6	41	37	0
C	8	16	15	80	6
D	8	34	22	125	3
E	8	52	39	177	6
F	8	48	38	173	5
Totals	48	2 hr. 47	6	629	20

TABLE IV. RESULTS OF PART METHOD OF LEARNING

(Combined Results of Subjects R. B. and E. D.)

Puzzle	*Total Trials*	*Total Time*		*Total Moves*	*Excess Moves in Final Trial*
		Min.	*Sec.*		
A	5	12	29	28	0
B	4	12	47	48	0
C	4	23	15	61	1
D	4	11	49	46	0
E	4	7	69	49	2
F	4	5	26	69	2
Totals	25	1 hr. 13	55	301	5

By a trial is meant a period devoted to solving a problem once.

TABLE V. COMPARISON OF FOUR FACTORS OF THE TWO METHODS OF SOLVING PROBLEMS

Name of Factor	*Whole Method*	*Part Method*
Number of trials	48	25
Total time	2 hr. 47 min. 6 sec.	1 hr. 13 min. 55 sec.
Total moves	629	301
Excess moves in final trials	20	5

The "excess moves in the final trial" shows the degree of accuracy and thoroughness with which the puzzle was learned —zero indicates (Tables III and IV) complete accuracy of achievement. For if a puzzle could be completed, e. g., in five moves, and the subject took seven moves—two would be the number of excess moves in the final trial—the puzzle was not presented to the subject again.

If the two modes for solving the problems be checked and compared by these four criteria: (1) number of trials, (2) time involved, (3) number of moves actually made, (4) number of excess moves, the evidence is decidedly and convincingly in favor of the part method. There was no way to determine the amount of over learning in either method, but in the writer's judgment it was negligible in both cases.

VI. Summary

A. Facts relating to the subjects' responses while solving and learning the problems:

1. Trial and error responses were gradually superseded by those of control and purpose when the function of a piece in the puzzle was recognized, or when some factor by reason of its contributing to the solution attracted attention and forced recognition, e. g., a large piece in a simple puzzle or a very small piece in one more complex.
2. Attention, recognition, efforts of control and of purpose grew more prominent and effective with the formulation of a plan that embraced all or nearly all of the problems, e. g., building the puzzle along and from the diagonal, or upon the rectangular base in complex problems.
3. The knowledge gained in solving one puzzle was applied to the solution of the next, provided that similarity of parts and of plan were recognized. This was what usually happened.
4. The puzzles were built without exception and regardless of plan from left to right.

B. Facts concerning the whole and part methods:

1. With but few exceptions the whole method required four trials and the part method two trials to learn each puzzle. (Solving in this report is a function of learning. Several solutions were necessary before the problem was learned.)
2. The time spent in solving and learning was more than twice as long by the whole method as by the part. (Over learning was not apparent in either case.)
3. The number of moves made to solve a puzzle was on the average more than twice as many, and the inaccuracy in the final trial was four times as great in the whole method, as in the part.
4. Interest was better sustained throughout in the part than in the whole method.

VII. Discussion

1. Haphazard methods gave way to consciously derived and rational ones, which were in turn improved, or superseded

by still better plans formed by conscious and deliberate intent. This agrees with Ruger (6, p. 49), who says, "The results of the practise series with the puzzles seem to show, however, that with such material the method of conscious control is the efficient one" for problem solving. There were, of course, chance moves that brought good luck and got attention by reason of that fact, in the complex puzzles, but more often original moves guided by an idea due to critical observation of the pieces was the method.

2. The formulation of plans and principles appeared to rest, so far as objective data were concerned, upon the more obvious features of the puzzle pieces, such as position, size, shape, direction of line (cut edge), the relation between pieces, their common or different connections to still other pieces and to the whole, and, so far as the subjects' responses were involved, upon grouping, relating and organizing the several meanings as apprehended in and extended to the puzzle pieces. Dewey (3, p. 131) in discussing the extension function of meaning says that "objects would be as isolated and independent intellectually as they seem to be spatially, were they not bound into groups or classes on the basis of characteristic meanings which they constantly suggest and exemplify."

3. The superiority of the part method over the whole places in bold relief certain factors and conditions that lead to the apprehension of meanings, to their organization and coalescing into principles used in solving problems. This advantage of the part method in the present investigation doubtless depends upon: (1) The immediate repetition of solving the problem. This corresponds to the excellent principle of *recitation* used in memorizing. (2) The part method kept the complex and difficult problems in abeyance until the simpler ones had been mastered, and in this way graduated the difficulties to the learner's capacity and rate of learning. (3) The part method obviated the tendency to retroactive inhibitions that operated more or less in the whole method.

4. Building the puzzles invariably from left to right is merely another instance of the functioning of habit in the interest of reasoning (7, p. 33).

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REPETITION VS. OTHER FACTORS IN LEARNING

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If general practice is to be taken as a correct indicator, it would seem that the most important factor conditioning learning is that of repetition, or exercise. It makes little difference what the subject is, the procedure most consciously attempted in teaching is that of *drill*, or the putting of the child through some exercise or other. This is done with the feeling that, by so doing, the members concerned perform the act previously used more perfectly on succeeding occasions.

In many cases this subsequent relative ease of performance is found to be a fact. Just what is responsible for this change, however, should be more seriously considered and better understood. To do so, is likely to discover that other factors function in even greater degrees than is thought to be the case for repetition. To know the factors or the factor most instrumental in bringing this change about is to have gone a long way in attaining the best results in teaching. The failure in attaining adequate results in many instances of mere repetition has become proverbial. There are few teachers who have not heard the story of the pupil who was kept after school to write the expression, "I have gone," an excessive number of times, only to find that in a real situation of life, involving this idea, a return to, "I have went," was had.

Some will argue that he did not repeat the correct form a sufficient number of times, else the correct response would have been securely fixed. Such cases of failure, in spite of the long and frequent use of mere exercise factors, are numerous. If it were not for just these exceptional cases the argument for more and more exercise would have more weight.

Look, for a moment, at another aspect of the matter. Every teacher has experienced many cases of near perfection in adjustment under the conditions of a single response, or

[1]The writer does not submit this article with the feeling that what is here presented is final or in any way an ultimate explanation of learning. He recognizes that as we come to know more about the physical and biological sciences we are going to get a more and more complete statement of what is necessary for the most effective teaching. But some of the ideas here expressed might indicate, to those whose function it is to arrange stimuli-response situations, that possibly the story of just how learning takes place has not been completely told, and that there is yet much to be done in this field.

situation of experience. If numerous repetitions are necessary in making meaningful new situations presented, what is the explanation for such cases? Again, such experiences seem to be the most lasting in memory. This is likely due to the factor of crucialness, or need at the time in making for life's adjustment. Who has not had some such experience as being told but once to avoid the danger of some definitely defined source of disease and made the adequate adjustment when such threatening situations presented themselves, or has always remembered and avoided a bad place in a road which caused the breaking of some part of the automobile necessary in travel?

It seems very plain that repetition is inadequate as an explanation for much of what is learned as well as for failing to produce results, in some cases at least, even when it is used with great lavishness. Then we must look to other factors, as well, for an explanation of what is necessary for the best results in teaching, if we care to control all the factors that seem to be adequate in producing the necessary changes in adjustment.

It does not take an expert to see that teaching, as we have it now, presents very little other than the exercise factor as a means of bringing the desired change. Likely there is validity in the statement, "We learn to do by doing"; but let us express the matter in another way and take a look at it. "We do because we have learned." In other words the performance is only an indicator of what has taken place in the equipment, involved in the response, and not necessarily the factor making the change. Learning is change, and what is changed is likely some aspect of the response machinery. Just how the mere fact of use gets ahead of the necessary change in the mechanism is hard to see. It is somewhat like crossing a bridge before it exists. The crossing might be evidence of the bridge, but I doubt that the act of crossing had anything to do with the existence of the structure. There is complete agreement on the point that some kind of change is had, but there seem wide differences as to the nature and the causes of these changes produced. Exercise might be necessary in making more "permeable" the nerve pathways necessary for the proper response; but some other factor must be operative in such cases of immediate learning as are indicated above, and this is in greater amount than is commonly thought. From most any angle that one looks at the problem it seems that the change induced, if it is to remain, is one to be defined in terms of a particular relation between what is newly presented and what is had already (memory).

It seems that whenever a new impulse is had it more or less

fuses throughout the system, rather than takes on a well-defined path. This would seem to imply that all the possibilities of direction in pathway responses are open and that the matter of learning is that of selecting the correct pathway out of the many, and making it more permenent. This permanency might be accounted for on the basis of repetition, if it were not for the many cases of apparent exceptions to such a conclusion. Is it possible that this memory factor might be defined in terms of the *degree of fitness* that obtains between the already organized scheme (nature and nurture factors) and the new impulse set up by the new situation presented? This fitness might be even more fundamental and deep seated than is the case for mere neural bond relations. It might involve the *electron arrangements, or even more fundamental or elemental factors*, required in material identity, for it should be remembered that nitrogen valence changes are had in the different pathways required in the responses of a frog, which means that electron changes are involved in such phenomena. If this is the case, then it is likely *what is done to this organized system*, and not *what is done by it*, that produces the readjustment, or change, called learning.

The two other factors responsible for learning that have been presented, particularly by E. L. Thorndike, are readiness and results. These two have been given very little place in the actual procedure in teaching. They are recognized as necessary factors by most teachers when theorizing on the subject of learning, but in actual practice, repetition, or exercise, is given by far the most prominent place.

By readiness is meant the set for neural response motion. This shows itself in degrees, and the intensity with which it shows itself on different occasions, and the direction of its projection, determine what is taken in. This seems to be the selective element of one's nature. Surely, this fitness is accompanied with pleasure, but does this feeling aspect "stamp it in" or is it held simply because of its relation to what is already had? Since the fitness is likely never absolute, but relative, it is not hard to understand the case of the pupil kept in after school indicated above. The reason he did not retain what he had been forced to exercise on was that it was only in a very slight way related to his nature. In other words, it was not vital in his life's processes as far as his accumulated response equipment was concerned. For the case of avoiding the disease (above) the matter presented was vital, or it fitted more completely into his native and acquired nature, thus making it impossible to do otherwise than to be retained.

We hear very much about the readiness factor in terms of interest, purpose, ideals, etc.; but for the most part, in teaching, it takes very little definite form in the understanding of the inherited and acquired nature of the particular pupils concerned, in their relation to the new work presented. To particularize on this point is to speak of the previous preparation—field work, supplementary study, assignment, question or any stimuli previously presented. In other words, it seems to be what is done to the organism that determines its selective direction (readiness) of the future.

When matters are presented in such a way as to conform most closely to the kind (for any given time) of nature possessed by the pupil, there is no question as to the operation of the selective and memory factors. In such cases we say, "They are intensely interesting," which means in practice that the first presentation (if it is made complete) is all that is necessary to produce the change called learning. The simple fact is that it *fits*.

This *fitness*, which seems so essential to adequate learning, is what is meant by effects. Because of its *fitness* it is held. Then it is very important to let the pupil know in definite terms and at the time of stimulation, or as near that time as possible, the results of his attempted responses in making adjustment. This can likely best be done by means of taking objective measures of his exercise results. This makes the situation possible of verification, which means that the entire motive (organized being, or readiness) has been accomplished only to be again projected for further adjustment.

Exercise, while necessary, is so, largely because of its function in indicating what has been done to the organism by way of change in organization for adjustment. This change has been affected by what *has been done to the organism*—impingement upon receptor ends producing organic and mechanical changes necessary to the response produced and not by the acts themselves.

The factors, then, of most concern to the teacher, if the best results are to be had in the producing and directing of change (learning) are, first, readiness (native and acquired nature); second, such stimulation as is in keeping with this nature, or can be taken in by it; third, a knowledge of results, which can be had only by means of definitely and objectively checking the responses had. To "repeat" these responses (which in a technical sense is likely never done) is to provide only another measure of what has gone on in the organism during the interim since the last checking.

It is likely true that much means and energy can be saved,

to us all, if the lion's share of the "humdrum" of drill and repetition now in common use, not only in our schools but in all other walks of life as well, be supplanted by a more serious understanding of the relation between what is presented for purposes of stimulation and what the creature is by nature (native and acquired); i. e., do those things most conducive to shaping the factors of readiness, provide the stimuli that are most fitting, and have the being respond for only a sufficient number of times to adequately test the fitness in organization for adequate adjustment.

INFANTS' INHIBITION: A GENETIC STUDY

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The writer kept notes on obvious inhibitions of his two infants from birth until they were several years of age. Some of these notes are presented below. In recording them the interest of the writer was not only in cessation of activity but the cause of such cessation. Does inhibition merely mean arrest of activity or a shifting of neural discharge? What relation has inhibition to attention? What is its significance in control of conduct?

Notes

Day 1. B ceased crying immediately after birth when I pressed my palm softly over the top of her head. This repeated several times with like results. However, a mere finger touch on the head provoked cries. J during the first day ceased crying when face was softly touched or hips patted. Dearborn noted like reactions to touch sensations the first day. Pfluger reports "a brainless new born child" that, when screaming violently, could easily be quitted by letting him suck his finger. Peterson noted a case that stopped crying three times in succession, to the sound of a rattle, on the sixth hour.

Day 2. J ceased crying when I whistled. B, three times at unusual sounds.

Day 7. B stopped nursing when I made a variety of sounds.

Day 8. J would stop crying when piano started to play, and begin crying at once when it ceased to play—this for seven successive times. Likewise B ceased crying when she heard a new sound; but not always at the same sound repeated.

Day 25. B will stop crying when the door of her room is opened.

Day 27. J ceased crying when I entered the room where he had been alone. Although he ceased crying on hearing the piano he failed so to respond after a few times.

Day 30. J not only will cease to cry but will fall to sleep when I sing to him.

Day 48. J ceased nursing as I looked at him with head and facial gestures.

Day 64. After he had cried for almost half an hour, he

ceased when mother merely spoke to him. While nursing he stopped very suddenly and turned his head, looking into his mother's eyes, without her first making any facial gestures or any sounds.

Day 77. B will immediately stop nursing to look toward newly turned-on light.

Day 96. Stopped nursing suddenly and turned about toward the window when the tower bell above him rang, maintaining that position until the ringing ceased. He would do this invariably up to the 120th day. Likewise he stopped nursing to watch with wide-open eyes his aunt break macaroni into a pan.

Day 146. Fixed attention by J is accompanied by perfect stillness. Noted in B also about the same time.

Day 158. J, who had merely clawed one's face when his hands touched it, is now beginning to feel softly over it.

Day 174. Perfect stillness as one holds a watch to his ear. Fixed attention always means immediate arrest of movements.

Day 177. When J started to nurse I yelled about 6 feet away, and he turned and smiled at me. As I spoke and gestured he continued in same position, and with mouth opened as it was at the time I yelled.

Day 180. Always stops play or any activity and remains motionless while the tower bell rings.

Day 182. For the first time he was found wholly relaxed while lying comfortably on the floor, cooing. For some days his legs while sleeping were perfectly relaxed.

Day 203. Will lie on the bed perfectly relaxed. This is a very decided development.

Day 227. J voluntarily lay down in his carriage for several minutes at a time.

Day 234. While B was sucking her thumb her mother called sharply to B: "Take that thumb out of your mouth." She withdrew it as of obedience. Later a like reaction was elicited. She did not obey as an adult would, but merely relaxed suddenly, whereby the thumb mechanically withdrew.

Day 247. J very suddenly paused, and looked around toward the door, in the midst of play, when he heard a familiar sound. Likewise his activity at any time will cease suddenly, to let him turn to watch a hissing steam pipe or running faucet. In all cases, where he does not reach for a substitute object, he relaxes grasp very slowly; when reaching, however, the relaxation is very quick and easy.

Day 281. Had reached over the edge of the carriage about to drop a pan lid, when I called sternly. Then he put the pan lid back into the carriage. Again this is mere inhibition and

not "obedience." Again, when about to pull off a bureau cover with contents, I called to him and he released grasp as if shot and turned and looked "pitifully" at me.

Day 287. When twenty of his familiar blocks where placed on his high-chair tray in front of him, he threw ninteen of them to the floor in 20 seconds. After starting to throw the last one he withdrew it, chewed on it for 40 seconds before he threw it. When this experiment was repeated he kept the last one in like manner for 68 seconds. On third trial, 20 seconds; fourth trial, 7 seconds.

Day 288. Twentieth block in experiment kept 110 seconds; in next performance last block was kept 5 seconds; third performance, dropped as quickly as the other nineteen; but the third block had been held 36 seconds.

Day 298. Frequently after starting to do something, as throwing a toy, will stop suddenly, with no apparent reason. Will cease any activity to seize a speck of dirt on the floor.

Day 307. About to insert a bunch of carnations into his mouth, I shouted to him, when he dropped the flowers to the floor. B ceased all play movements on two occasions when music started in the house above us. Each time, after a few seconds, she resumed her play.

Day 313. While I was building blocks for him to knock down he would hold his hands upraised while I said, "Wait now."

Day 315. While J was with G, I reached out hands to take him; as usual, he extended his; then he withdrew quickly and turned about to seize G by the neck. He repeated this several times in succession. His hands having been slapped for seizing a book, he would frequently look toward it, extend hands about to take it, look toward his mother, who said: "No, sir"; he finally turned away without touching them.

Day 318. Sometimes he will drop his toys as if paralyzed, to clap his hands in response to request, or on seeing a drink of water or morsel of toast approaching him.

Day 321. For several minutes he looked at pictures in a magazine which his mother showed him, making no attempt to seize, tear or crumple the paper. This is a very decided development of a few days. Paused in midst of play to listen, motionlessly, to striking of tower clock; at another time to the starting of a lawn mower.

Day 324. Ceased eating immediately to listen to a band play, a block away. When about to seize some object will drop hands immediately when one calls "No." Often reaches for the spectacles on my face but checks his grasp without a word or gesture from me.

Day 327. Feels gently over one's face with index finger only. He has learned not to touch my books or papers anywhere they may be found.

Day 339. A calmness never before noted as he sat in trolley, where he moved eyes and head instead of jumping about.

Day 358. While creeping he turned about like a flash and returned to an object he had left. Has done this several times lately. Maybe he suddenly remembers something he has seen. Very frequently checks himself when about to do something heretofore forbidden. When carried out is perfectly still and does not jump about. When fed or given a drink, no longer seizes the cup or spoon, although he has never been forbidden to seize them. He was "motionless" for about *ten minutes* as he watched for the first time a gasoline engine running.

Day 361. Does not throw dolls around as roughly as other toys. For several months, when a morsel as of bread is given him, which he does not want, he lays it down carefully, but does not throw it down. While playing with different blocks and toys, he stops occasionally to examine certain ones.

Day 363. Whereas he generally has tossed about, at random, and has tried to look at things or reach them, when being diapered, he is now beginning to lie almost without motion. Lately, too, he has been quite inactive after a nap. Sat on his mother's knee today for eight minutes, perfectly relaxed. When angry he by no means tries to walk but sits down and howls.

Day 365. In the midst of play, at times, will stretch out lax on the floor, on his back, sides or belly; sometimes manipulates small objects in that relaxed position.

Day 369. When on several times he started off to walk across the floor to a person opposite him, he turned about before making the final dash. Though he rarely cries when hands are slapped for taking things, he never again takes things for which hands have been slapped.

Day 375. In the midst of play he turned toward the door in a quiet attitude when he heard a crow caw. He later did the same.

Day 379. Things which he wants or already has he will give up without crying if one makes a great ado about them.

Day 391. Periods of relaxation longer and more frequent. He lay still on the couch while I counted 40.

Day 438. Lies on the floor motionless several minutes at a time.

Day 416. He always watches a thrown object till it comes

to rest. Often then the throwing hand is sustained in the final throwing position while he watches.

Day 450. Has never broken anything with a ball. Has learned to throw low. As a result of but little punishment he does not scar furniture. Readily learns what he can or cannot do or have. Started for a dish of food several feet away; walked fast as if going for something, then after a few steps turned about and looked for something on the floor. Again he started, and once more looked about, when he finally hurried to the food.

Day 460. On passing the refrigerator from which he was accustomed to get graham crackers, he suddenly dropped a toy and begged for the cracker. Beginning to lean against things, as couch, restfully, in a standing position.

Day 464. When his mother called, "Baby John can't find his mother," he ran to find her, carrying a block in his hand. About half way he dropped it, but ran about three feet, then turned about, seized the block and returned to his play, apparently forgetting his mother.

Day 471. Having raised his hand to strike a chair with a toy, he first looked at me, holding his hand for striking, then without a conscious gesture or a word from me he slowly lowered the block.

Day 473. Instead of knocking down his box-blocks, my "No, no" led him to pick them off the pile one at a time. Given a bit of zwieback when he had a cracker, he seized the zwieback with the empty hand and with the other, stooped and carefully laid the cracker on the floor. What he does not care for he will throw with force. This also noted in B at about the same age.

Day 477. Blocks built so high that they will scarcely stand he will take down one by one, without upsetting them.

Day 506. Points frequently to things which have often been forbidden, with a shake of his head, meaning, "I dare not have it." He is very cautious as he walks about his high towers of builded blocks, lest he knock them down.

Day 525. Having found two egg shells in which he showed keen interest he was told to throw them into the garbage pail because they "were dirty." He hesitated, then instead of throwing them he very softly laid them into the pail.

Day 525. Running for another toy of a group which he was transferring from one side of the room to another, he stopped suddenly, about half way, and turned back, manipulated the block last carried, then ran after the next one.

Day 533. Will stop crying when injured, if one says: "Where is Fido or where is Kitty," or if these are shown him.

Day 553. When with uplifted arm he was about to throw a ball, he ran to the kitchen, got his broom and asked me to bat the ball with the broom.

Day 573. If on waking at night he begs for something or to be taken up, can be quieted if one talks of certain persons he is interested in or of certain animals. The same was noted for B.

Day 594. With no suggestions from any one, after throwing a ball to G several times he inhibited uplifted hand and did not throw.

Day 755. While playing, will often drop toys abruptly, without suggestion from any one, and run for a drink of water. About to do something he will at times very suddenly change. Sometimes in response to a question of choice may answer, very slowly, then may change from one answer to another.

Day 872. Having been reprimanded for eating a piece of ground raw meat, when I was out of sight he seized a second bit but without anyone's suggestion he threw back the meat.

In the instances above, it appears that cessation of any kind of activity implies a shifting of the direction of neural discharge, the "supplanting of one sort of activity by another."[1]

Applied to Control of Conduct

Our whole governmental machinery—legislative, executive and judicial—is employed chiefly in attempting to prevent members of society from doing what organized society considers to be wrong. On the other hand, upon the several educational agencies seems to rest the responsibility of helping lead all members of society to do what the leaders of society consider to be desirable conduct. But, unfortunately, much of the home education, as well as that of the church and school, has been occupied in an attempt to prevent certain modes of conduct. How many are the parents and teachers whose "Don't do that" is rarely in evidence? It seems perfectly natural for any one who assumes responsibility for controlling the conduct of others to take for granted that he should merely *prevent* certain activities without any concern about the kind of activity that ought to be substituted so long as what he counts reprehensible shall not be repeated.

If we are going to get anywhere in the building up of character, we must set out with an interest in the positive, desirable activities, so that at the critical moments, when the child is about to do the undesirable, or is doing it, we can lead him to do, instead, what he ought to do.

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[1] "The Psychology of Child Development," Chap. IX.

Contrary to this seemingly ideal mode of attempting to control conduct is the traditional fear appeal. Whereas by such an appeal we can temporarily deter him from a given activity that same fear appeal may likewise deter him from the very kind of activity which at the time is most desirable. Fear stimulus, moreover, seems to check any activity which has not become pretty highly mechanized, by supplanting that activity by another which is more highly mechanized. With fear appeal, there seems to be a damming up of neural energy which later bursts forth along the paths of the least resistance. In terms of conduct, there is no assurance that the bursting forth will be in the right direction. Indeed it seems most often to be in the wrong direction. Furthermore, there is nothing in the fear appeal that elicits the co-operation of the individual whose conduct we attempt to control. Usually there is little or no choosing—the supplanting activities do the choosing for themselves; it is a matter of the most nearly related reflexes.

In terms of attention of the actor, cessation of any activity implies a shifting of attention toward another activity *per se*, or toward the real or symbolized end of that activity. In attempting to prevent a given activity by a fear appeal, the attention usually is scattered, with the fear stimulus claiming it in part, or with the attention on the factors relative to the activity to be prevented, or on numerous other possible factors, depending on the reflexes most called into activity by such an appeal. If, on the other hand, there is offered the appropriate suggestion toward an activity which the suggestor is certain will command the attention of the actor, and which he, on his own account, will choose to do, the immediate cessation of the undesirable activity in question is inevitable.

In the long run, every one does only what he wants to do; therefore, whether to check a certain kind of conduct or to develop a certain kind, about all we can hope to do by way of controlling another is to lead that person to want to do what we want him to do—in other words, to make our wishes his. This is possible only in so far as we can tie up, by appropriate associations, that person's most cherished wishes with those which it is desired he shall make his own. Needless to say that the degree of success will depend upon our familiarity with that person's most impelling wishes and upon the esteem which he holds for us.[2]

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[2]Myers, Garry C., "Control of Conduct by Suggestion: An Experiment in Americanization," *Journal of Applied Psychology*, March, 1921, Vol. V, p. 26-31. "Army Lessons in English," War Department.

In conclusion, we prevent wrong conduct in a person by leading that person, with the right positive suggestions, to want to do what we consider is best for him to do. It need not be a matter of his conscious wish. All that is necessary is that what we want him to do shall become more attractive to him than what we do not want him to do. This more attractive activity may vary from the lowest form of reflex to the highest order of "conscious" activity.

The Evolution of an Infant's Walking

Writing about "gross bodily control," Thorndike in his "The Original Nature of Man," page 47, says: "It appears to the writer that the contribution from training is slight, that these accomplishments are in origin much more like breathing, winking or sucking, than like playing tennis, dancing or swimming. The case of walking is instructive. Here, although under the conditions of civilized family life, children appear to learn, or even to be taught, to walk, it has been shown that the appearance is illusory.[3] The baby's trials with varying and increasing success are not the causes of a habit, but the symptoms of a waxing instinct."

The writer offers some notes below which he began to record more than eight years ago (July 10, 1913) and which seem to indicate that for the child observed, at least, walking is a kind of gradual evolution from the first day of the child's life. Pushing against objects touching the soles of the feet, throwing out the arms when quickly lowered or raised, and the vigorous grasping reaction on the first day of the child's life, all of which parents and nurses must have observed from time immemorial, are undoubtedly among the few fundamental original reactions out of which the numerous other reflexes are conditioned and other habits are developed to make up what is called walking. (See John B. Watson, "Psychology from the Standpoint of a Behaviorist," Chap. VII. Also Garry C. Myers, "Grasping, Reaching and Handling," *American Journal of Psychology*, 1915, 26, 525-39.

Note—The numbers at the left of each paragraph indicate the age of the child in days. J. and B. are the assumed names of the children studied.

1. B—Gentle, uniform pressure on the soles of her feet elicited from her vigorous pushing.

2. J—Pressed very hard against nurse's knees with soles of feet, and most when angry at having head washed.

[3]He refers to Kirkpatrick ['03], p. 79-81; Trettien ['00], p. 42; Woodworth ['03], p. 315.

3. J—Lying on belly in bath, dug his toes into the nurse's knees and pushed with feet in unison sliding his body. Then with a new "dig" he, after drawing up feet again, pushed himself several inches.

16. B—Whereas a soft touch on the soles of the feet elicits a drawing away of the feet, slight uniform pressure stimulates pushing in opposite direction. While supported by nurse's hand under her stomach, she straightened limbs against nurse's knees with her trunk rigid, throwing herself from the nurse's lap.

25. J—If soles of feet are touched by chair or anything he will push his feet in unison against it.

49. J—Can scarcely be kept in one's lap if soles of his feet touch any supporting object.

50. J—Put on his side, he will immediately roll over.

72. J—He maintained his grasp of my hand while I pulled him from reclining to sitting position, bending his body only at his hips.

87. J (from this time on)—He will pull himself to a sitting position if one keeps one's seized hand taut.

112—Can sit in one's lap without aid.

114—Can roll from back to either side.

139—Almost wriggles out of mother's arms on being dressed.

143—For several weeks when lifted from crib or from one's lap, while he is in partial upright position, he gives strong push from his feet by straightening and stiffening his limbs as he is lifted up. On attempting to lay him down, if his soles touch the bottom of the crib, he so stiffens himself immediately as to be like a log, when he must be so placed in the crib.

152—While his feet were held firm he raised from a reclining to a sitting position, then dropping forward.

153—Sat for 15 minutes in the carriage with only the support of the strap in front of him.

177—Twice rolled off blanket 30 x 30 inches, and then 26 inches beyond the blanket—all in 15 minutes.

180—On attempting to reach for toy dog he got on knees and forearms, but his hands failed to co-ordinate with his feet.

181—While on toes and hands he failed to move forward to his doll 18 inches away.

182—While on his back on floor, whirled about on shoulders as a pivot with the aid of his feet only, and by so doing moved forward about four inches.

184—While held under his arms so that his feet barely touched the floor, he makes rapid alternate movements as if dancing a jig.

192—In carriage he pulls himself to sitting position by

grasping the sides of the carriage. Will not lie down when awake.

200—When taken up, he allows his legs to flex at knees by mere relaxation, then straightens them quckly, resulting in an upward spring. So times it as to occur just when one starts to lift him up, from under the arms. Heretofore when he would lose balance while in a sitting position on the floor, he would just roll over like a log, bumping his head or face. Today he threw out his hands, which protected him.

210—Can sit on the floor with no support. About half the time in his carriage he stands, even while carriage is moving on the street. Thus he stands about three minutes at a time, getting down to rest. Sometimes he releases his hands from the sides of the carriage while it is moving and is supported by the carriage strap alone. This requires considerable balance.

218—He can rock his carriage by rocking his body while in a standing or sitting position.

225—Got himself up on feet and on hands almost at arms' length, but failed to move forward.

230—Cannot yet get right co-ordination of hands and feet for creeping.

245—Feet held down by covers, he readily rises in his carriage without aid of his hands.

253—Lying across the bed he pushed himself by placing feet on the bed and then straightening legs.

292—For the first time he moved forward when put on the floor. His hands pulled as he vigorously pushed with his toes. Had been able to thus move backwards for a few weeks.

293—Creeping has developed in very pronounced form.

295—Crept all over the room.

303—In addition to creeping, he, in natural sitting posture, walked on hips.

304—Chest still drags some on the floor because his arms are weak.

305—For the first time he developed, in creeping, alternate instead of unified pulling. He creeps only when for desired objects. When in a great hurry he resorts to original creeping movements of unified pull with hands followed by a unified push with the feet.

306—Stood in carriage, holding to its front, while wheeled across a rough street.

309—For the first time he mastered alternate movements of hands and knees in creeping. If while in haste he starts to go forward he may go backward in spite of his efforts.

313—For first time put weight on toes and hands instead of knees and elbows. Always rises to sitting position after

arriving at goal. Upon the appearance of an attractive object while he is in a sitting position he will spring forward to creeping position on hands and feet, very quickly.

319—Remains standing in carriage while wheeled several blocks.

320—Creeps now as an adult would.

321—Climbs up by furniture repeatedly and will stand with the support of only one hand. Walks very well when one holds him by one of his hands. Holding to the couch, he steps along it alone.

322—Sometimes creeps with feet flat on the floor.

323—Has developed a good and easy way of getting down from standing to sitting position. He holds to support as long as he can, then squats quickly but softly.

325.—Creeps with objects in one hand.

326.—When one lets him fall forward from standing position he nicely catches himself on palms. Also bends his knees quickly then.

331—Pulled himself up to the table, standing on his toes, with perfect balance.

334—Practically runs along the couch. Can rise and stand by smooth surfaces, as wall. Seized his mother's arm at full length with one hand, then the table leg with the other hand, about 18 inches away. Then released mother's arm and stepped toward table, seizing the table leg with both hands. Often stands holding himself by one hand while manipulating object with the other. Crept 100 inches in 5 seconds by the stop watch.

339—Often stands rocking empty chair, with no balancing difficulty. Will sometimes stand by furniture, release both hands, using them in manipulation of objects, apparently not aware that he has no support.

340—For the first time he rounded the corner of a box (walking). Arms fly out in perfect order as protective of him when he is falling or about to fall. Climbed up by closed door and walked along it.

345—Formerly would climb up beside chair, etc., seize the chair with one hand and, with the other, reach to the floor for desired object for manipulation. Now he has such objects in hand or hands as he rises. A number of times he stood for several minutes wholly unsupported, manipulating objects. As soon as he knows that he has no support he drops.

356—Instead of dropping quickly to a sitting position, after releasing his hands, he paused at that point an appreciable time before assuming the sitting position.

357—Took three steps alone.

356—Spends almost half of his waking hours on his feet. Walked across floor only with the support of A's hand meeting his softly, both at full length.

359—In a hurry to get something he will throw himself from a sitting to a creeping position in an instant, very quickly and easily.

360—Made three steps alone from chair to bed.

361—While eating crackers he released the hand that was supporting him, on several occasions, standing wholly alone. Highest number of steps alone—eight. Walks a great deal around furniture. Stood several times alone when he apparently was aware of the fact.

370—All alone he got up in the middle of the room and walked off 5.5 feet. Often squats on haunches with no support. Walked exactly 7 feet alone. Each time when he stopped walking, it was not because he fell at that time. Instead, he slowly and gracefully sank by bending his knees.

376—He stood while I counted 52. Then he walked 10 feet. Hands were out at full length, held slightly forward. Always does best when he starts wholly alone. The only severe bumps he has got have come when we have tried to help him. Walks as if on stilts. Has not learned to properly flex knees. Walks most about 6 P. M.; least after rising in the morning. For the first he carried objects while walking, e. g., piece of cardboard, box, ball, diaper.

377—Reaching for an object out of sight on the table he jumped, clearing the floor with both feet. Walking speed—Five feet, 4 seconds; 5 feet, 5 seconds; 7 feet, 5 seconds; 4.5 feet, 2 seconds. Later, 12.5 feet, 10 seconds (38 steps).

379—Walked 15 feet without difficulty, returning without getting down.

378—Now beginning to use his hands, as for waving, while walking. Receives no hard bumps in walking when let alone.

380—Seldom creeps.

381—Carried a flatiron (19 ounces) about the room, walking with apparent ease. Very often carries things while walking. Readily rises from middle of floor without aid. Can stand and stoop down to pick up object, without support, not losing balance. Carried a saucepan 9 feet, then 15 feet.

383—Standing on one leg and holding to the couch he kicked a box with the other foot.

383—Thirty-five steps, 16 feet, 12 seconds; 25 steps, 11 feet, 8 seconds.

387—In walking he does not move his arms as adults do. Instead he moves them in unison.

390—Stood on one leg alone, swinging other. Carried an

orange in both hands above his head. He can stop walking at any time and stand still, at once. Walks with feet from 3 to 6 inches apart. Still walks stilted.

394—Walked 54 steps the first minute; 47 steps, second minute; 83 steps, third minute; 79 steps, fourth minute. He fell several times first two minutes. Each attempt was a running forward till he fell. Later made 95 steps in 94 seconds, no falling. Rarely stumbles over toys.

403—Can easily step over obstacles 4 or 5 inches high. Has not learned how to sit down on a box or cushion. Struts about, shoulders back, belly forward.

407—Walked about 200 yards over rough road, but would not accept any aid.

408—Put one foot into a cigar box while standing on the other leg unsupported.

413—Jumps to goal as he nears it on a run. Sometimes while very happy his running is interspersed with jumps.

419—Has developed a kind of galloping—left leg rising higher than the other.

423—Fails in his attempt to kick things.

427—Running: 30 steps, 8 seconds; 36 steps, 9 seconds.

447—In running or walking over obstacles he is learning to flex the knees instead of throwing the legs over like stilts. Stepped backwards 3 feet to lean against the wall against which I was leaning. Learned to kick a ball on the floor.

466—Facing a box he turned about face to it and sat down. After discovering how to do this he repeated it 13 times.

481—Walked backwards half the length of the room, pulling his toy rabbit.

487—Walks backwards often and freely.

489—While walking has learned to turn the head independently of the body.

520—Stepped upon box 8 inches high, holding by the couch, but stepped down alone, making running movements to stop. Did this 27 times. When the box was removed to the center of the room he stepped up one side and down the other 74 successive times. Then seizing his toy rabbit he repeated the performance 76 more times in a total period of 20 minutes.

552—While very happy he is apt to go about walking or running on his toes.

556—Learned alone to sit on a cushion.

568—Walked around a whole city block.

580—Often stands for a few seconds on one foot. Repeatedly he stepped down from a platform 5 inches high and got his balance each time without any running movements.

582—As from the beginning of walking he selects roughest

places to walk on. Walked eight blocks. Insisted always on stepping up and down curb alone.

589—Walked twelve blocks.

696—Can make as many as six successive jumps on spring bed, before losing balance. For few weeks has on several occasions whirled about like a spinning top until losing balance.

819—Tried but failed to kick football after throwing it upward.

837—Walked 1½ miles at a stretch.

842—Several times while in happy mood he stood alone on one leg and threw other leg into the air in various directions, maintaining balance.

865—Standing in an inverted shoe-box lid (cardboard) he jumped out of it with feet in unison. Later he jumped forward on the floor as far as 18 inches.

879—Stood on a block on one foot, other free, balancing himself for several seconds.

892—Jumped over a stick while I held it 4 inches from the floor.

976—Almost daily he walks about 1¼ miles.

BOOK NOTES

"The Revolt Against Civilization": The Menace of the Under-Man. By LOTHROP STODDARD. N. Y., Charles Scribner's Sons.

This is one of the wisest and most sagacious books that have appeared since the war. It is a volume that should be not only read but studied by our historians and sociologists and most of all by our statesmen. It presents better than any work we know the real problems now pressing upon not only this country but upon the civilized world. The author has a genius for synthesis and wide orientation and true vision of the future based upon the insight into present conditions. The perspective of the book, too, is admirable. The author nowhere loses himself in details of the many aspects of his theme which are brought under review, but remains true to his main purpose of showing that the world is in imminent danger of lapsing to the control of the "Under-Man" and that only eugenics given its widest application can save it. The style of the author, too, is singularly lucid. We believe that it is a book that hundreds of readers and those of the very best will wish that they had had wit to write themselves, and this is perhaps the best indication that the *Zeitgeist* has really found a voice in it.

It seems invidious to suggest any criticism of such a book, but if we were to venture to do so it would be that the author has not done justice to such expression of the folk soul as language and mythology and to certain fundamental religious and ethical ideas and institutions the origin of which cannot be ascribed to individuals, but are products of mass thinking and feeling, for it should not be forgotten that group activities and the instinct of the herd have given us not only mobs, but have also shown amazing creative power in the past, and that demos often symbolized as a beast has become at certain periods the chief agent of human progress. He is, too, in our opinion too *Weismannian.*

Principles of Social Psychology. By JAMES M. WILLIAMS. N. Y., Knopf, 1922. 459 p.

This work marks a real advance upon the author's "The Foundations of Social Science," and is devoted to a study of (1) the effect of economic conflict through social organization; (2) the clash of egoistic dispositions as a case of conflict; (3) the inevitable conflict between the egoistic and idealistic dispositions; (4) the failure of an idealistic leadership to win popular support. Conduct is considered in the interests of economic, political, professional, family, cultural and educational relations. There is an interesting closing chapter on the social reactions of suppressed impulses. The author here makes a real contribution to the psychological side of his topic and has written a book which sociologists will welcome and profit by. A suggestive bibliography of over twenty pages (although to our regret we find this confined almost entirely to English authors when there is so much foreign literature bearing upon the subject) adds to its value.

Early Civilization: An Introduction to Anthropology. By ALEXANDER A. GOLDENWEISER. N. Y., Knopf, 1922. 428 p.

After discussing man and civilization the author takes up illustrations of early civilizations—the Eskimo, Haida, an interesting chapter on the Iroquois matriarchate, Uganda, etc. Part II is devoted to industry, art,

religion and society, and Part III to the ideas of early man, theories of his mentality by Spencer, Frazer, Wundt, Durkheim, Levy-Bruhl, Freud and others, with an excellent summary chapter on early life and thought. Although the work proposes no radically novel theories in this field it is an admirable compend, well written, judicious, learned and—which is rare praise—will be found, we think, to profit almost equally the expert who wants his general views revised to date and the beginner who wishes to start with a clear conspectus of the problems just now most interesting both to anthropologists and to the general reader. It is one of those rare introductions to a subject which specialists need to read once in a while to keep their perspective just and true.

Public Opinion. By WALTER LIPPMANN. N. Y., Harcourt, Brace & Co. 427 p.

From a more or less psychological point of view this able author discusses this theme so vital for a democracy, pointing out the various factors which constitute public opinion which is prone to be stereotyped, to be influenced by interests, etc. There is a very good discussion of newspapers and of the modes and organization of agencies for diffusing information and intelligence.

Nutrition and Growth in Children. By W. R. P. EMERSON. N. Y., Appleton, 1922. 342 p.

After spending several years in studying malnutrition among children, Dr. Emerson discards many factors generally believed to be the cause of malnutrition, i. e., insufficient food supply, improperly cooked food, etc., for he finds that many children of well-to-do parents are malnourished. He concludes that the matter is an individual problem and that the factors now to be considered are: home control, food habits, health habits, physical defects and overfatigue.

Dr. Emerson's work in Boston has attracted attention in other cities and is becoming widespread. He conducted a successful clinic in the East Side of New York City where it was demonstrated that the malnourished children could be made well in their own homes, the gains varying from 100 to 200% of the expected rate of growth for normal children.

This book is the result of his clinical experience, gives many photographs and records of individual cases, and covers a wide field including: Part I, How to identify the malnourished child, giving weight standards and tables, case histories, physical and growth examinations, mental and social examinations. Part II deals with malnutrition and the home, home control, overfatigue, measured feeding, food habits and health habits, exercise and recreation, and the overweight child. Part III discusses nutrition in relation to the community, the nutrition worker, the physician, nutrition and the school, and school lunches. It contains tables of weights, nutrition records, and is a valuable book for parents, teachers, and social workers.

M. R.

In Defense of Woman. By H. L. MENCHEN. N. Y., A. A. Knopf, 1922. No. 6, Free Lance Books. 210 p.

The author in his introduction gives us a brief account of himself. Born in Baltimore in 1880, chief-editor of a daily paper at 25, then drawn to literature and "public psychology." He tells us that women have little respect for the merit and authority of men. The latter think themselves heroes, but woman's intuition, which is really intelligence, sees through all the "masculine bag of tricks" represented by success in industry, business and professions. Her concern is about far more vital things. In marriage there is war between the sexes because men want pleasure and

service and women support. The latter are not sentimental; only imperfect women care for male beauties. Woman's form as seen in war costumes is not aesthetic. Man is satisfied with the superficial things of dress and face powder, but, having been captured, he conceives himself as having taken the initiative and that his wife is beautiful, from sheer conceit. Women are not honorable in the old sense; that is their charm. No one is honorable in struggling for existence. We are so only when we are sure of winning. Every woman wants to marry a prince, millionaire or an ideal yet higher, and her demands slowly come down so that all of us plain men who may accept are her third or tenth choices. Loyalty to dead mates is brief. Men far more often marry beneath them than women, but the latter often feel their children are handicapped by the father they have. The law gives the married woman every right, and this is enforced by a romantic public sentiment. Marriage is the great enfranchiser. Piety is a social habit, and the attraction of the church is social. If a normal woman has any religion she gravitates toward Catholicism. Far more men than women go insane and more married than single. In the new age women are less inclined to marriage, and they even listen to Key and Sanger. A life of even professional looseness is not so bad even hygienically as we have thought, and even this life has its educative values. Husband and wife see too much of each other and should limit their contact, have vacations apart, etc. There will be more wars, and therefore a shortage of husbands.

The Reconstruction of Religion. By CHARLES A. ELLWOOD N. Y., Macmillan, 1922. 323 p.

This author holds that the salvation of the world can only come through the unity of all religions, Protestant, Catholic, Jewish and probably the great ethnic faiths of the East. No other human institution so embodies the idealistic aspirations of mankind as does the church. It must, however, be revitalized; and when the faith of the Founder is thoroughly understood, unity will be realized. The church preaches reconciliation but does not illustrate it. When it is Christianized, pagans will be converted. Many Jews are more truly Christians than many members of the Christian church. The "hospital" conception of the church as saving individuals must give place to a larger view that its chief duty is to socialize the world and increase the efficacy of all its teaching agencies, utilizing the press and school to deal with movements and forces, particularly those of public opinion, which is all controlling in modern society, as it has tried to do with the liquor traffic. We still have pagan mores in our western civilization, and it is mores that are really all determining. We only need a core of agreement and not uniformity of details. Public opinion must be free and disinterested and intelligent, and there must be a more scientific knowledge of social conditions. There is a higher kind of advertising that might be utilized. Bible teaching could be improved. In a word, the self-seeking impulses must be subordinated to altruism. The fact is selfishness has never inspired the devotion that unselfish ends can do. He would have the church specifically interested in justice, family life, better education, abolition of child labor, better regulation of toil, the prevention of poverty, temperance, health, better conditions for labor, provisions for old age, one day in seven of rest, a living wage, etc.